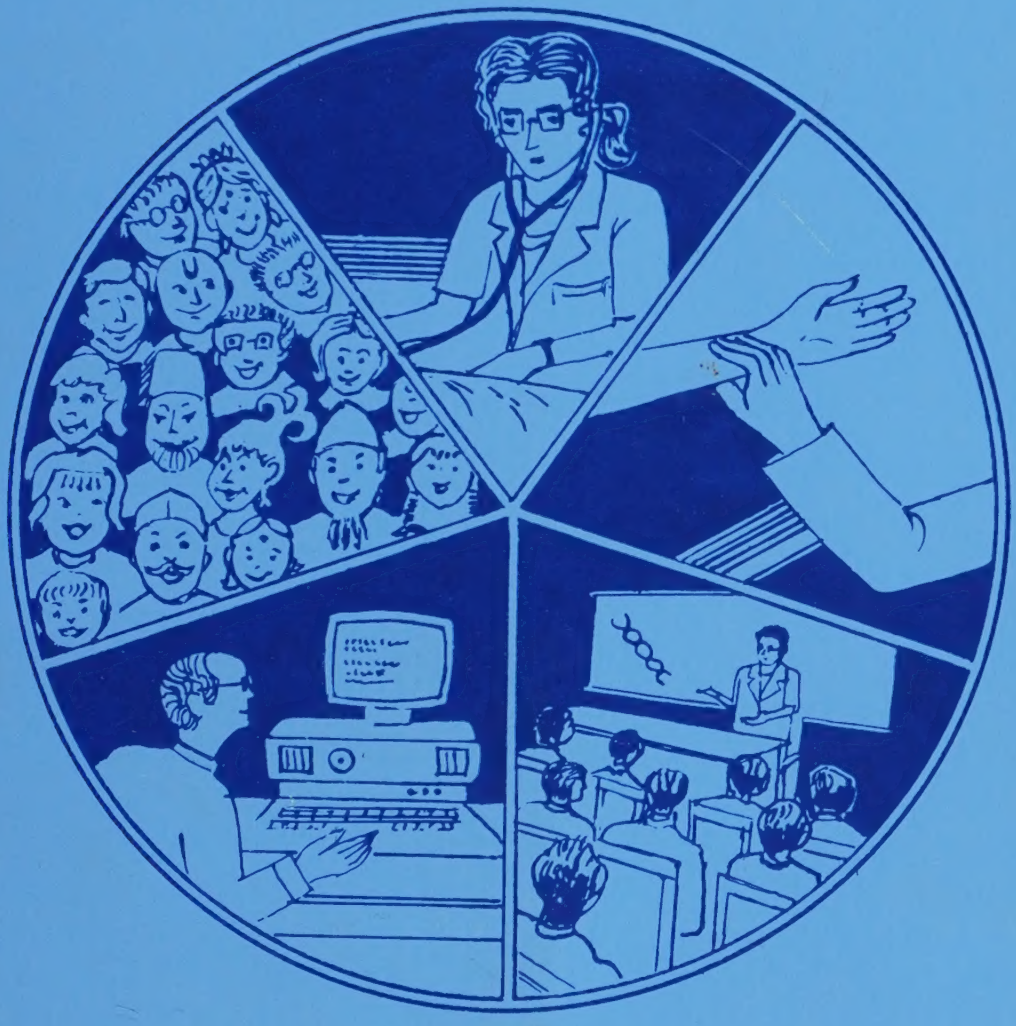
Regional Publication, SEARO, No. 21

INNOVATIVE PROGRAMMES OF MEDICAL EDUCATION IN SOUTH-EAST ASIA



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Printed in India

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ACKNOWLEDGEMENTS

We wish to express our gratitude to all the individuals and institutions who, through their assistance, contributions, and suggestions, made this publication possible. We particularly wish to acknowledge the following, who provided much of the background information: Professors Marifin Husin and Topo Harsono of Indonesia, Professor Abraham Joseph of the Christian Medical College, Vellore, India, Professors Maung Maung Sein and Daw Mya Mya and Dr Daw Win May of Myanmar, Professors P.C. Karamcharya and Gopal Acharya of the Institute of Medicine, Nepal, Professor R.G. Panabokke, Director of the Postgraduate Institute of Medicine, Sri Lanka, Dr Chaloem Varavithya of Chulalongkorn University in Bangkok and Professor Daw Myint Myint Khin. We are also grateful for the constructive comments of Dr Raja Bandaranayake of the School of Medical Education, University of New South Wales, Sydney, and the WHO Representatives of the countries concerned.

Finally, we would also like to thank Dr U Ko Ko, the Regional Director, and Dr Aung Than Batu, Director, Research and Human Resources, both of the WHO South-East Asia Regional Office, for their encouragement and wise counsel.

FOREWORD

Optimal use of the right kind of health personnel, in the right quantities and at the right time, is the key to the development and efficient functioning of health systems based on primary health care and to the achievement of the Health for All goal. In our countries, the central health care provider is the doctor, whose behaviour determines, to a large extent, the nature of the care that will be offered to individuals and the community. The doctor is also our most expensive health resource. Medical education therefore occupies a key position in development activities, and has been the joint concern of the World Health Organization (WHO) and national educators and planners for a considerable time.

For the last two decades, the WHO Regional Office for South-East Asia has been in the vanguard of the movement for reorientation of medical education, aimed at meeting the Health for All goals of the Member Countries. Also, as part of broader international activity, WHO has collaborated with the countries of the Region in developing prospectuses and agendas for the necessary changes. To support health development, medical education is expected to become community-oriented, which means that students learn about care in, of, and for the community. In accordance with this, curricula need to change in order to stress objectives and content relevant to health for all (HFA) and primary health care (PHC); teaching methods need to become more flexible, integrated, and linked to priority health problems; students need to learn to work in teams and in communities; and standards need to be competency-based and linked to local priority problems. As well, students need to be selected after ascertaining their background, orientation and aptitude for work in the socio-cultural circumstances where their skills are needed, and should be strongly encouraged to take career directions consistent with HFA/PHC. The overall emphasis should be on appropriate technology and comprehensive health care management. The expected outcome of all this is that doctors will understand which technical, social and behavioural measures are appropriate and acceptable to those using them, as well as applicable at costs that people can afford.

We are aware that reorientation of medical education along these lines is not an easy task. Difficulties originate from general conservatism and resistance to change within established institutes as well as from lack of knowledge about, and evidence for, the usefulness of proposed changes. Yet a number of interesting innovations have taken place in the institutions of this Region, and the case studies in this volume describe how some established medical education systems have initiated and adopted innovations and what the outcomes of these activities have been. I am in no doubt that the contents of this volume will be of interest to, amongst others, medical educationists, health planners, medical councils and other licensing bodies, and practising health workers.

I must thank the health administrators and experts from Member Countries who have assisted in many ways by providing background information for these case studies. I am sure that this publication will make a useful contribution to the reorientation of medical education in the South-East Asia Region.

Dr U Ko Ko
Regional Director

1 Introduction

THE aim of medical education is to produce doctors who will promote the health of all people. However, despite the enormous progress made during this century in the biomedical and social sciences, this aim is not being realized. The individual patient expects the doctor to be a listening, observing, sensitive, communicative, competent clinician. But this role is hardly sufficient today as millions suffer and die from diseases which are preventable, curable or self inflicted, while millions have no access to health care. The preventive, promotive, and rehabilitative abilities that are required of today's doctors are still conspicuously absent in most countries. Although these defects have been identified for a considerable time, attempts by the countries to overcome them have not been altogether successful. Hitherto the response of medical education has neither been adequate nor nearly appropriate and the much needed changes in the objectives, contents, context and processes of medical education have yet to be introduced. This has led to mounting concern among medical educators and decision makers regarding the urgency of developing innovative strategies and programmes to reorient medical education to meet community needs.

Today however, medical schools have little choice but to respond constructively to the populations's needs; yet not many have elected to do so. If medical schools and their affiliated institutions are to provide appropriate types and numbers of physicians to meet the population's health needs, what principles should be considered and what information is needed? What are the respective roles of the universities and medical faculties, professional organizations and accrediting bodies in making these choices? In particular, what institutional and professional competencies are required to make future physicians more responsive to citizens' perceived individual and collective needs? Some of these questions have prompted the production of this document.

Innovations in medical education are a global issue. Over the past few decades there has been increasing concern that the curricula of many medical schools place too much emphasis on memorization of facts and information and too little stress on problem-solving or development of self-directed study skills necessary for the practice of medicine. Methods of teaching which rely on memorization of facts result in passive learning by students. Although such methods of teaching may have their place in medical education, 'spoon-feeding in the long run teaches us nothing but the shape of the spoon' *(E M Forster)*. That increased vocational and practice-oriented components in medical education are necessary has been indicated by studies which suggest that most of the personal knowledge used by doctors in solving clinical problems is based on individual experience rather than on common core knowledge.

The World Health Organization has been actively promoting Reorientation of Medical Education (ROME) in South-East Asia since the mid-seventies. As far back as the fifties it was recognized that medical education, which was discipline-oriented, teacher-centred and conducted mainly in tertiary hospitals (as in the West), needed to shift towards the actual community needs of the Region and to emphasize preventive and community aspects of medicine. Therefore in the sixties and seventies medical schools in the Region established community medicine departments and began to teach community medicine. Also during the seventies, WHO established a network of regional and national teacher training centres which systematically set about strengthening health personnel education and training programmes by introducing the principles of educational science. As a result of these efforts, by the early eighties the countries of the South-East Asia Region had developed a nucleus of health personnel educators who possessed the necessary expertise for influencing the formulation and implementation of medical education programmes. It was during the eighties that, consequently, a number of the innovations described in this volume began to be implemented.

A series of consultations on medical education organized by WHO in the South-East Asia Region during the past decade has helped, amongst other things, in formulating the goal for Reorientation of Medical Education (ROME) in the Region. This goal envisages that 'by the year 2000 all medical schools should be producing graduate or specialist doctors who are responsive to social and societal needs and who possess the appropriate ethical, social, technical, scientific and management abilities to enable them to work effectively in comprehensive health systems based on primary health care'.

In line with the overall goal of ROME, a series of targets has been identified by the countries of the Region. While the individual country situation determines the specific targets in each case, the general targets include:

- developing a medical education system which is responsive and relevant to the needs of the country in terms of the quality and quantity of medical graduates produced;
- engaging the active cooperation of teachers (especially those with most influence), professional associations, licensing bodies, health care services managers and communities in the reorientation of curricula;
- carrying out educational programme reforms by adapting the criteria and procedures used for selection of medical students so that they are directly related to the expected performance of the graduates;
- selecting and making curriculum changes – departmental, institutional or through separate track approaches – that will permit:
  - the modification or introduction of learning activities which will give doctors the necessary abilities to take into account, while practising, the social and ecological perspectives of health and disease as well as the social etiology and consequences of ill-health;
  - the modification or introduction of learning activities or experiences which will allow students to develop social, ethical, technical, scientific and managerial competencies and capabilities in relation to the totality of health care, viz., promotion, prevention, cure and rehabilitation;
  - the modification or introduction of learning activities which expose students to real-life situations in the community and provide learning-settings, affiliated to medical schools at the primary, secondary and tertiary levels in a balanced way throughout the programme, so that students can develop skills, including managerial skills, which are relevant to local health needs;
  - the introduction of changes in the educational process which will allow it to become learner/student oriented, so as to promote self-initiated and self-directed learning as well as self-evaluation;
  - the introduction of problem-solving based, task-related learning as well as team learning in small groups of students;
  - the promotion of learning activities which involve teams of students from different professions, so as to facilitate team-work skills in future doctors.

- modifying student assessment procedures and criteria so as to validly measure the expected performance of graduates;
- modifying and supporting administrative mechanisms and structures of medical schools in order to facilitate: (a) the development of curricula; (b) the development of appropriate teaching/learning methodology; (c) the development and use of appropriate student assessment methods; (d) support for faculty development programmes needed for curriculum reform; and (e) the development of mechanisms of assessment at the national level to coordinate information support and development, and to encourage cooperation between schools, disciplines and other sectors in community development.

Innovations in medical education that have been introduced in the South-East Asia Region include development and reorientation of undergraduate and post-graduate medical education systems, greater community orientation, and introduction of problem-based learning, self-directed learning and integrated teaching.

Community-based health personnel education programmes include, as defined by WHO, an 'appropriate number of learning activities in a balanced variety of educational settings, ie. in both the community and a diversity of health care services at all levels, including tertiary care hospitals'. For a considerable period of time there existed some confusion between the concept of community-based or community-oriented medical education and that of community medicine. Two consultations that were convened by the WHO South-East Asia Regional Office attempted to clarify these concepts, and it was agreed that community orientation of a curriculum has a wider connotation and goes beyond merely strengthening the teaching of community medicine (which is often carried out by one department). Community orientation should permeate the entire curriculum of a medical school.

Bringing those studying to be health professionals into direct contact with the community and its environment in order to prepare them appropriately for practising in the community, an assumption from which the idea of community-based education arose, means that students develop concepts and skills in such areas as community organization, population needs, epidemiological analysis, health education and problem-solving skills related to common and priority health problems of individuals and the community. Community medicine generally occupies eight to twelve per cent of curriculum teaching time, although in some of the programmes outlined in this publication a greater percentage of time has been allocated to community medicine. For instance, community medicine covers 16 and 23 per cent of curriculum time in the Chulalongkorn and Nepal programmes respectively.

Problem-based learning (PBL) is a method of learning centred on problem analysis and solution. It encourages the learner to formulate questions, to find information, to integrate basic and clinical sciences, and to make decisions. Problems used in medical education are generally individual patient or community health problems, and the complexity of the problem is related to the level of the learner but is not so complex as to create frustration. Students find answers to the problems from resources such as reading materials in libraries, text books, audiovisual materials, computer-assisted instruction, and skills laboratories. Problem-based learning is therefore a method of active learning, and can be contrasted with the passive learning that follows methods of teaching, such as lecturing, that rely on memorization of facts. The role of the teacher in active learning is different from that in passive learning. In problem-based learning, the teacher may guide the learner, but does not provide answers. The teachers role has been aptly explained by Kahlil Gibran: 'if he (a teacher) is indeed wise he does not bid you enter the house of his wisdom, but rather leads you to the threshold of your own mind'. In problem-based learning therefore, it is the learner who determines what, where and how learning will occur to deal with the problem, and then takes steps to achieve that learning. Such learning is to a large extent self-directed and the student's ability to apply the learning to the problem provides feedback and constitutes a form of self-assessment. The problems themselves are carefully selected and are as close to real life as possible, to ensure that the learning is relevant and meaningful and will thus be retained. Such self-directed learning instills self-confidence and helps students to develop critical thinking, clinical reasoning, quick decision-making and problem-solving abilities as well as motivation to continue acquiring up-to-date knowledge after graduation.

Integrated teaching is a teaching method in which all related basic science and clinical subjects are learned at the same time. Earlier attempts at integration of medical curricula were based on organ systems, although today most integrated programmes are based on health problems. The method is an attempt to introduce greater relevance and meaning to medical education, and while the method brings together basic sciences and clinical subjects, making the former more meaningful, it also encourages students to actively participate in the learning process, so leading to greater understanding and retention of knowledge.

More than 1350 'traditional' medical schools exist in the world, where almost all the world's doctors receive their basic training. Case Western Reserve University in Cleveland, USA was the first to introduce a medical education programme that used an organ system approach to integrate the curriculum. This was in the fifties, and although there was a certain degree of scepticism amongst faculty members in the beginning, the programme was later well accepted by both

faculty members and students and led to a world-wide resurgence of interest in integration. In the mid sixties McMaster University Medical School, in Canada, was the first to institute a radically different undergraduate medical programme that emphasized self-directed, interdisciplinary learning centred around patient problems. Following this, Maastricht Medical School in the Netherlands, Newcastle Medical School in Australia and a number of other medical schools were opened, all of which adopted problem-based curricula. The challenge in our own Region, which has nearly 200 medical schools, has been to introduce the essentials of PBL into the curricula of already established medical schools, so that students can benefit from the educational advantages of PBL. Therefore, although PBL in medical education has been in existence for more than a quarter of a century, it is relatively new in South-East Asia, and the studies cited in this publication may be considered innovative in the context of the time and place of implementation.

There are three broad areas where the impact of innovative schools can be assessed. These include the impact on health care (such as primary health care data and quality of services), the impact on the education of health professionals (such as funding of medical schools by governments, licensure of physicians, conditions of service for teaching staff), and the impact on the availability of competent physicians (with attitudes and skills in consonance with the goals of their medical schools and suited to their practice locations). The various aspects of impact are considered further in the overview.

The aim of this publication is to support the programme for development of human resources for health by disseminating information on some interesting innovative attempts to introduce greater relevance into medical education. The particular programmes selected for the publication are representative of some of the innovative approaches to medical education that have been tried out in various schools in the Region. The studies are not intended to merely be objective evaluations of the effectiveness and efficiency of the programmes, but rather to be descriptions of activities, of difficulties encountered and of the lessons they hold for other educators. The innovations vary considerably in the degree to which they are original, the strategies that have been employed, their context and orientation, the educational structures and processes used, and their relationships with the health services. Each of them has attempted to introduce one or more modifications to what was already existing and practised. It is in this sense that they have been identified as innovations.

Some of these approaches have worked and others have not been so successful, so that the studies can act as guidelines to those who need to embark on innovative programmes of medical education. Each of the selected

programmes was introduced for different reasons and in answer to different problems. For instance, the MESRAP programme (Thailand) was introduced because the distribution of medical practitioners in the country was failing to meet rural health needs. The programme is innovative in its emphasis on the selection and training of students from rural areas, in its curricular emphasis on community medicine and in its training and utilization of provincial and district hospital staff as teachers. The postgraduate programme of Sri Lanka was introduced to unravel the social and political difficulties of the old postgraduate system and it highlights the problems that are likely to be faced by those wishing to change the established order of things. The programme is considered to be innovative in the way it introduced a system of postgraduate medical education at the national level and in the way it overcame the resistance of the medical establishment through a combination of legislation, incentives and compromise. The CHAD programme in Vellore (South India) was established to provide community-orientation for serving the needs of Christian communities in particular. This programme is innovative in its emphasis on community-based, problem-oriented, self-directed and self-evaluated learning methods as well as on team-work skills, and in its use of block postings. The programme in Myanmar was introduced as a result of the emergence of a critical mass of education expertise ready for change and to orient the medical education system towards meeting technical and social needs. This programme is innovative in the way it has introduced PBL into an established curriculum when so many other schools are struggling to do so. In Indonesia the innovation outlined is more an educational management strategy for medical education system development. A national system of undergraduate medical education was introduced, bringing together governmental and non-governmental sectors. Other innovative aspects of the system include the introduction of community-orientation in all programmes and the judicious use of incentives and disincentives. The Nepal programme, as in Thailand, was also a response to improve the relevance of the educational system and the geographic distribution of trained manpower in the country. The programme was built on the existing system of health manpower development and a curriculum was developed in which a number of the most important features of ROME were incorporated. This programme is particularly innovative in its use of community-orientation and in its selection of students.

The case studies presented here bring out the difficulties encountered in trying to make changes to the established order of things. Perhaps it is helpful for would-be innovators to remember that 'one change always leaves the way open for the introduction of others' *(Niccolo Machiavelli in The Prince, 1513).*

2

Chulalongkorn University Medical School, Thailand; An Environment Conducive to Innovation

Introduction

THE oldest medical establishment in Thailand, Siriraj Hospital, was founded in 1886, while the attached medical college was founded in 1889. Initially the training programme at the school was of three years duration, but it was expanded to four years in 1903, to five years in 1913 and to six years in 1915. In 1923, with the assistance of the Rockefeller Foundation, the curriculum was revised to the basic structure it has retained ever since (two years pre-medical and four years medical training). There are now ten medical schools in Thailand, including seven in Bangkok (one of which is private) and three in the provinces. Chulalongkorn University was established in 1947. Problems which exist in the country regarding medical personnel include insufficient numbers of specialists, maldistribution of general practitioners and specialists, and training programmes which are inappropriate for specialist needs. The Thai Medical Council works closely with the Ministry of Public Health and Faculties of Medicine in the planning and implementation of various educational programmes. Postgraduate medical education was established in the country in 1968.

Changes in medical education in Thailand are guided by the National Conferences on Medical Education (NMEC), which have been held about once every seven years since the first conference in 1958. Each conference has considered basic aspects of medical education such as curriculum, competency of graduates, admission, the teaching and learning process, research and collaboration. The curriculum has changed following each conference, and the

third conference (in 1971) recommended the inclusion of subjects related to community medicine and behavioural sciences. After this, in 1972, the compulsory service law was passed, under which a graduate receiving a government scholarship must serve in provincial or district hospitals for three years. In the years following this, the Medical Education for Rural Areas Project (MESRAP) of Chulalongkorn University began to take shape. The 5th conference (in 1986) suggested that new graduate doctors lacked competency in many areas (such as administrative skills, psychomotor skills in medical procedures, PHC support skills, knowledge in social sciences and the necessary attitude for working in and with the community), and that an innovative medical curriculum to promote the qualities of critical thinking, clinical reasoning, decision making, and problem solving as well as leadership skills and the ability to work in a team was needed. Soon after this the Faculty of Medicine at Chulalongkorn University began to develop a Community Targeted Problem Based Curriculum (CTPB). Thus the National Medical conferences in Thailand serve as an efficient forum for problem identification and definition.

Around 1971, when the third conference recommended the inclusion of subjects related to community medicine and behavioural sciences in the curriculum, WHO helped to trigger the development of the Unit of Medical Education (MEU) in Chulalongkorn University. WHO was at that time actively promoting workshops and fellowships in Education Science and Technology, and designated MEU of Chulalongkorn University a WHO Regional Teacher Training Centre (RTTC). The unit has the function of advising faculty members on developing curricula to suit the needs of the country, and plays a significant role in planning for the NMEC conferences. The objectives of MEU are to serve the educational activities of undergraduates and postgraduates, and include evaluation and follow-up of medical curricula, selection of students, teaching and learning, evaluation of students, programme evaluation, and planning and implementation of educational training programmes for health science teachers in South-East Asian countries. The unit consists of 22 staff members, five of whom are full time (two medical doctors, one educationist, one statistician and one administrative assistant), while the others spend about 20 per cent of their time in the unit.

This medical education unit has played a critical and catalytic role in directing medical education in Thailand, including starting innovative medical education programmes (such as MESRAP, the Parallel Tract, and a Master's in Health Development course); providing support and training to other universities to form their own MEUs; and running regional and inter-regional workshops, seminars, meetings, and short courses for students from the region and elsewhere.

MESRAP (Medical Education for Students from Rural Areas Project)

Origin

In Thailand, the majority of the population lives in rural areas. In 1971 the country had less than 6000 medical doctors and a population of 37 million. Only one third of the doctors worked in the provinces. In Bangkok the doctor:population ratio was about 1 to 1000, but that for rural areas was about 1 to 14 000, and in some parts of the country it was 1 to 50 000. There were then only about 900 doctors for the 1200 posts which already existed in district and provincial hospitals, and more hospitals were planned in all the 600 districts of the country. Thus there was a serious shortage of doctors in the peripheral health care system.

So the circumstances which gave rise to the idea of the MESRAP programme of Chulalongkorn University included shortage of doctors, unequal distribution of doctors, and unwillingness on the part of doctors to serve in rural areas. It had also become evident that the training given to doctors lacked relevance to local needs. The 3rd NMEC in 1971 recommended that a method should be found to satisfy the need for more doctors in Thailand and that the maldistribution problem needed to be attended to. It was also recommended that large provincial hospitals and health centres operated by the Ministry of Public Health should be used in clinical teaching. This would permit more students to be processed without additional costs.

At that time the majority of medical students came from Bangkok and those with up-country education had much less chance of entering medical school because of the inferior quality of many schools in rural areas. All medical schools responded to the needs of the country, accelerating programmes for training medical students and recruiting up-country students, and provincial hospitals and health centres were added to the sites utilized for clinical teaching. Different approaches to the problem were devised by the different medical schools, with that at Chulalongkorn University being known as MESRAP. Programmes to increase the number of doctors in rural areas are now implemented in six medical schools.

MESRAP was therefore initiated as an experimental project to see whether doctors trained in existing provincial and district hospitals, and in health centres, would be as competent as those with traditional training and whether graduates would be better, and more willing, to work in rural areas if prior arrangements as to their future employment were made and a particular type of curriculum followed. The rural setting of training was expected to be more realistic and more conducive to building up and/or maintaining appropriate attitudes for rural

practice. Students were to be recruited from the areas intended for their work, and were to agree, before being accepted into the programme, to definite places of work following graduation. Investment in the hospitals for the programme was to be limited to purposes of teaching and learning, and in this way investment and overhead costs were considerably lower than those that would have been involved had a new medical school been established.

The Programme

Implementation

Planning for MESRAP first began in 1976, with negotiations between Chulalongkorn University (CU) and the Ministry of Public Health (MOPH) about launching the new programme in addition to the 'normal' programme. Chantaburi Provincial Hospital, in an underserved rural province of 390 000 people, was selected as the field station. Four working groups – on student selection, curriculum development, faculty development, and physical development – were set up, along with a joint coordinating board, to establish the programme and develop it beyond the initial stages.

Selection of students, from the eight provinces in the eastern region of the country, began in 1977. This area would also serve for job placement after graduation. In 1978 the project was endorsed by the National Economic and Social Development Board, and then, together with budget support, approved by the Cabinet. In June 1978 the first group of ten students was enrolled, just over two years after the initial negotiations. In 1979 the number of entering students was increased to 15, and in 1982 the intake area was enlarged to include the southern part of the north-eastern region (an additional four provinces) and the number of entering students was increased to 40. In 1985 the intake was 50. Cholburi Provincial Hospital was selected to be another clinical training centre, and half the students have been trained there since 1985.

The first group of nine students graduated in March 1984 and, after their internships, were posted to district hospitals, as planned. To date, 249 doctors have been produced under the programme. Initially students were required to do five years compulsory service (including the internship) after graduation. However, this has now been reduced to three years (excluding the internship) because all the available posts in the area have been filled.

The curriculum

MESRAP students spend their first three years at Chulalongkorn University (CU), where they become part of a regular class (of 100), studying in the same

programmes and being subjected to the same evaluation procedures. However, they also have a supplementary programme (including clinical activities, home visits and nursing) which is carried out at the district and village levels during the inter-semestral and summer vacations. In this way the students are exposed very early in their training to the most common health problems of rural communities. During the first year at CU the students attend classes in medical sciences (in the Faculty of Science) as well as general educational courses in social sciences, humanities, and in reading and comprehension of English. During the 2nd and 3rd years (preclinical), they attend courses in the Faculty of Medicine, some of which are integrated while others are discipline based. MESRAP students spend their last three years at provincial hospitals (Chantaburi or Cholburi). The final year is a period of internship. In comparison, the regular track medical students spend their last three years in clinical training in urban hospitals.

The regular medical graduates must afterwards spend three years in rural or underserved areas, but few remain there. The majority prefer to undergo further training and become specialists. Most regular graduates eventually work privately, and hence more lucratively, in Bangkok.

Emphasis in the curriculum is put on community medicine, which covers 16 per cent of time. This is the highest among medical schools in Thailand, where 8 to 12 per cent is normal. Initially, several models of community medicine curricula were planned, tried and revised. Seventeen priority health problems in Community Medicine were selected. Emphasis is placed on these problems in the early clinical years, and self-directed learning packages have been produced. Real life situations in hospitals, health centres, and communities are used as learning settings, and discussions on the clinical decision-making process and on attitudes in real service settings constitute the main teaching activity. Several district hospitals in the area were selected as model hospitals where appropriate knowledge, skills and attitudes for working in rural settings are expected to be learned.

Curriculum development for MESRAP took five years and concerned only the clinical curriculum (the existing preclinical curriculum was used for practical reasons). The goal of the new curriculum is to produce physicians who are interested in health care in rural areas, rather than technicians who are dependant on sophisticated, expensive urban facilities. The five years of curriculum development took place through a series of workshops which were used for staff development, in which teachers from the university acted as co-workers or advisers. All staff doctors at Chantaburi and Cholburi provincial hospitals were actively involved as the main working force, and representatives from all other hospitals and health-related institutions in the area participated at intervals. In

this way objectives were defined, courses were planned and reviewed, trials of courses were carried out, revisions were made, and self-directed learning packages and self-instructional modules were developed.

Innovations and concurrence with ROME targets

Innovations in the programme include the emphasis on selection and training of students from rural areas. The selection process is innovative and particularly rigorous, as described below. Although MESRAP students become part of a regular class at CU, they also have a supplementary programme which is executed at the district and village levels and their last three years are spent in provincial hospitals. The use of provincial hospitals for teaching purposes in this way is innovative.

The curriculum is innovative in the sense that it lays emphasis on seventeen priority health problems in Community Medicine in Thailand. Self-directed learning packages on these topics are used, and real life situations in the hospitals, health centres, and communities are used as learning settings. Curriculum development took five years, and involved a series of workshops which were used for staff development. All provincial hospital staff participated in these workshops, as well as (at intervals) representatives from all other hospitals and health-related institutions in the area. The training of provincial hospital staff, which is intensive and covers the great majority of teachers at these hospitals, is another innovative aspect of the programme.

Selection of students

To be eligible for the MESRAP programme a student must have lived in the Eastern provinces of Thailand for at least five continuous years. The student must have a history of good moral conduct and personality, as well as of good educational performance. Once a student is accepted into MESRAP he/she must not apply for higher education elsewhere, otherwise his/her selection is forfeited.

There is a rigorous selection process which includes attitude, aptitude and achievement tests. Each year, 75 students in the villages of eight provinces are identified at the high school level, and at the termination of their studies 15 are selected for admission to the medical school by a simplified version of an aptitude test.

The selection process is in two parts. During the two years before completion of secondary education the candidates must work for eight weeks in a provincial

hospital, during which time they do a variety of tasks and are evaluated by hospital staff. Training of provincial hospital staff involved in selection of students is carried out in workshops and site visits. This period is of value to potential students as it gives them a good idea of what their future life will be like. Quite a few students give up after spending several weeks in the hospital because they do not like what they have experienced. If the students pass this evaluation they must then sit for a written exam, to assess their attitude, aptitude, and maturity. The prospective students are also interviewed by the provincial committee, and five candidates are selected for each opening. These selected candidates then undergo the second part of the selection process, which is undertaken by CU. This consists of an academic achievement test which covers mathematics, chemistry, physics, biology and English, as well as a personality test and mental health examination.

A committee, chaired by the Dean of the Faculty of Medicine and including the chief provincial medical officers in the project area and programme officers, then makes the final decisions regarding selection. Selected students are then assigned to specific posts in the district hospitals (that have been assigned by the Ministry of Public Health specifically for this programme) before they enter medical school. Each selected student is required to sign an agreement to serve at this predetermined post for a minimum period of three years after graduation.

MESRAP is the only Thai programme that assigns promising students from rural areas to provincial hospitals for several weeks and assesses their behaviour as part of provincial selection. Evaluation of the recruitment process has shown that academic achievement in chemistry and physics, and results of aptitude tests are useful indicators of students' worth, and of their eventual satisfactory performance.

Staff development

This is one of the main activities of the programme. It was thought that the programme would fail if urban medical school teachers were used in a rural programme. District Hospital staff are therefore trained to supervise students, and also take part in other training activities such as workshops on educational technology and conferences on specific subjects. Scholarships are given for continuing education in Thailand and abroad. Incentives have also been introduced, such as academic recognition as assistant, associate or full professor of CU, for those with substantial academic contributions. These arrangements for training district hospital staff make the programme relatively inexpensive.

Evaluation of the Programme

Periodic evaluation of the various components of the programme has led to modification where necessary. For example, a cost assessment project early in the programme resulted in an increase in class size to 40 or 50, which was estimated to be the most economical.

In addition to periodic evaluation of various aspects of the programme, a comprehensive evaluation was carried out in 1986 in which MESRAP graduates (of which there were 36 at the time, from three classes) were compared with regular track graduates from the same and other universities. Information concerning academic achievement, clinical competency, management and training, and attitudes and human relations, was collected from both staff and graduates. Results showed that there was essentially little difference between MESRAP graduates and graduates of other programmes and universities. MESRAP graduates were not so good in management, but were more competent in training skills. MESRAP graduates were shown to possess favourable attitudes and skills for working in rural communities, integrity, emotional stability, self-confidence and self-learning ability.

Most MESRAP graduates are satisfied with their education and are not concerned about their obligation to work in rural areas. In fact, they feel comfortable with preassignment and lack of alternatives. They feel very definitely that the MESRAP programme should continue. Although they often feel that they are looked down upon by the regular track graduates, they themselves do not feel inferior once they have left the more academic atmosphere of CU. They do not feel that there is any difference in capability between them and the regulars. In the peripheral hospitals they gain a lot of confidence. MESRAP graduates are often proud of their training and feel they probably do better than 'regulars' in community medicine because they are chosen by the people and are better at handling such things as epidemics than are the regulars.

To date, about 28 MESRAP graduates have completed their compulsory service. While eleven of these doctors are undergoing postgraduate training, the rest still remain in the provinces, thus indicating that the MESRAP experiment has worked.

Problems Encountered with MESRAP

Opposition

The greatest resistance to the programme came from staff, both senior and junior, who did not want change. The teachers expected that, as the MESRAP students are recruited from a less advantaged group of students, their learning

capability would be less than that of the highly selected group of regular medical students. Teachers were therefore concerned about falling standards. Chulalongkorn University normally admits only the cream of students, and MESRAP students are not up to this standard. In particular, pre-clinical teachers feel that they teach to a lower level and still somewhat resent the MESRAP students.

Teachers and other MESRAP personnel

The patient-care workloads of community-based staff in hospitals and private clinics are heavy, and compete for teaching and preparation time. The qualification, willingness and readiness of the local doctors and other health personnel for their additional teaching responsibilities have often been questioned, as such people are not teachers by vocation. Although teachers at Chantaburi and Cholburi hospitals and the health centres have been very cooperative, lack of skill and confidence in teaching in the problem-solving mode have led a number of staff to use authoritarian ways of teaching such as lecturing.

Another problem is that there has been a continual change of personnel involved with MESRAP, at all levels, including directors of participating hospitals and deans of the medical school. This has necessitated a continual exchange of information between the new personnel and those who are already participating.

Resources

There have been problems because of limited resources. The upgrading of Chantaburi provincial hospital to the status of a medical centre was insufficiently funded due to a recession and limited national growth. Provincial and district hospitals are less adequately staffed and financed than the medical school hospital, and improvements can only be made to a limited extent. The lack of adequate funding threatened the progress of the programme, although contributions from international organizations helped to make several activities possible including staff development workshops, purchase of books and audio-visual aids, and the awarding of scholarships for teaching staff.

Student selection

The student selection process, especially the observation period at provincial hospitals, requires a lot of time and effort from the staff, and there have been inconsistencies in the results. The students selected through this process are less prepared to study in the University than regular students, who have passed the National Entrance Examination, and for some students the adjustment is very hard. Many MESRAP students do badly during the first semester after

admission. To help overcome this, an orientation and tutorial assistance programme was organized. Adjustment and learning appear to improve in succeeding semesters with this support, although most students have to work very hard for the first few months.

Impact

One of the main objectives of MESRAP is to get doctors to work in rural areas, and in particular in the district covered by the programme. In this respect it is difficult to assess the impact of the MESRAP programme because of the recent economic growth and development in the area covered by the programme. Development of the Eastern Sea Board port means that this part of the country is no longer remote and undeveloped, and doctors now want to stay and practice in the area of their own accord. Preassignment is coming to be seen as an asset rather than an obligation. It can be argued, therefore, that one of the main objectives of MESRAP, that of getting doctors to serve in the particular rural district, would have been achieved even without the intervention of MESRAP, because of the economic growth and development of the area.

However, other objectives of MESRAP, including that of developing a relevant curriculum, would not have been achieved without the intervention of MESRAP. That the MESRAP curriculum is relevant was indicated in 1986 when, as mentioned above, MESRAP graduates were evaluated and compared with graduates of other programmes and universities. There were no essential differences in ability between MESRAP graduates and graduates of other programmes, but MESRAP graduates were shown to possess favourable attitudes and skills for working in rural communities. Thus there has been an impact on attitude. About 50 per cent of MESRAP graduates want to stay in rural areas and become GPs/family doctors, while 50 per cent wish to study further and become specialists.

Although it should be borne in mind that the MESRAP provinces are no longer undeveloped, a positive impact of MESRAP is indicated by the fact that there is now no shortage of doctors in these provinces, and students have to work in provinces other than the original twelve. To date, 249 doctors have been produced by the programme, and none of these doctors has yet left government service, even though roughly ten per cent of them have completed their obligatory service.

Over the last ten years, the number of doctors has increased dramatically in the country as a whole, and particularly in the provinces. For instance, whereas in 1980 there was a total of 6897 doctors in the country (4101 in Bangkok and

2796 in the provinces), by 1989 there was a total of 12 713 doctors in the country (5888 in Bangkok and 6825 in the provinces). Although MESRAPs contribution to provincial doctors is small (249) in comparison to the total number of provincial doctors, it is very positive.

Discussion and Conclusions

A number of factors can be considered to have been important in the success of MESRAP. These include clear and precise policy, and commitment to it by higher level decision makers such as those in the Government and the Medical Council; strong leadership; careful and meticulous planning; good rapport between the University and MOPH; and the problem identification and definition that take place during the National Medical Conferences held every seven years. Also important was the forum, in the form of a committee, which functions to improve collaboration between MOPH and the medical schools, and to oversee medical education in the country. This committee, which is funded by WHO, is comprised of very influential and committed members of MOPH and the Ministry of University Affairs with representatives from the Medical Faculties, dentists, nurses, and Thai Medical Council. The forum is very active. It meets once every month and is responsive to needs.

During the MESRAP experiment a lot of attention was directed to the training of staff. The time and effort spent training peripheral hospital staff who were to be involved with teaching, so that they became good quality educationists, was time well spent. Teacher preparation and curriculum development are time-consuming but highly essential activities, and, in the MESRAP context, success depends a great deal on the teaching staff in peripheral hospitals. MESRAP experience indicates that all university staff, from junior to senior, should accept new teaching methods before they are implemented, and that these attitudinal changes should be worked on first.

As far as resources are concerned, MESRAP experience has shown that doctors can be trained by making use of the existing regional infrastructure and facilities of the MOH (local hospitals), thus cutting down the cost of training doctors drastically. Economic cost/benefit analyses have shown that it is uneconomical to train less than 20 students at a time, the maximum figure being 50 and the ideal 30.

As far as students are concerned, surveys show that MESRAP graduates are in general terms satisfactory in their performance and compare well with regular track students. Despite experiences in other countries which show that villager-students are not inclined to return to the villages after a long stay in the

metropolis, MESRAP students do stay in rural areas. However, there are other factors operating (development of the seaport of that region). It was originally thought that, with a programme such as MESRAP, there was a potential danger of creating two academic levels (lower for rural areas and higher for the cities). It was thought that the existence of a rural group in a class might release the rest of the students from their moral obligation towards the country's health needs and unintentionally steer them towards staying in the metropolis, feeling that there are other people to 'do the job'. However, this potential danger has not been borne out in practice in the MESRAP experiment.

The MESRAP project resulted in two interesting side-effects. The project served as an impetus and incentive for schools in the MESRAP area to strive for academic excellence, in order that their students could make the grade and thus boost the school's prestige. This resulted in general improvement in the standard of students in the MESRAP area. Another side-effect was the effect of the project on the 'Community Hospital', whose standard has also improved since students were first posted there. There is now a prevailing academic atmosphere in the peripheral hospitals, and they get more attention from MOPH as there are students to be trained.

The MESRAP project has helped to create experience, expertise, and confidence in introducing innovations into medical education in Thailand. The prime objectives of MESRAP (to make good the shortage of doctors and have these doctors stay in rural areas) have been achieved, and doctors are now willing to serve in rural areas. Thus the MESRAP project can be considered to have been a success. It is likely that, for this success, such factors as the atmosphere of freedom in the country were important. As far as the application of the MESRAP model in other countries is concerned, in many countries such ideas would be prematurely killed, resulting in frustration and apathy of prospective innovators; or the process would be so painstaking and slow and uncertain that real success could not be hoped for. In such countries, an alternative might be to concentrate on smaller changes and progress incrementally.

New Track

Origin

As mentioned above, direction from the fifth National Medical Education Conference (NMEC) in Thailand indicated that an innovative medical curriculum, to promote the qualities of critical thinking, clinical reasoning, decision making, and problem solving as well as leadership skills and the ability to work in a

team, was needed. There is concern that these skills are lacking in today's doctors because medical schools are placing too much emphasis on memorization of facts and too little emphasis on problem-solving or self-directed study skills necessary for the practice of medicine. Although problem-based learning was incorporated into some of the MESRAP sessions, this was insufficient to instill the required qualities in the graduates. Therefore another parallel track programme was initiated by Chulalongkorn University, which is known as the Community Targeted Problem Based programme (CTPB). The programme commenced in 1988 and was launched with the cooperation of the Royal Thai Air Force. The programme is aimed at producing medical graduates with problem-solving, critical thinking and self-directed learning abilities.

Six years before this PBL programme was launched, a number of people were sent abroad to medical schools where PBL was in use, and from this time onwards attitudes were developing. Similarly, prior to the initiation of MESRAP, ideas had been forming for a long time and had evolved gradually.

The Programme

Implementation

The entire process of developing the CTPB programme took only one and a half years from idea formation to official approval and curriculum implementation. The strategies adopted by CU Faculty of Medicine for developing the CTPB programme included the conduction of workshops and seminars for the faculty board, with the assistance of experts both from within and outside the country; the changing of attitudes of faculty members by providing them with information on new approaches to medical education in other countries; the setting of educational goals by combining Thai primary health problems, Thai medical council standards for medical practitioners and the faculty educational objectives; applying problem-based learning and self-directed learning as a means for medical study; and collaboration with government sectors, such as the Ministries of Public Health and Defence, by using the community health centres and other medical centres as training sites for medical students.

Events in the rapid succession from idea formation to admission of students commenced, in 1986, with talks between the Dean of CU Faculty of Medicine and the Director of the Medical Department of the Royal Thai Air Force (MDRTAF). It was agreed that the MDRTAF Bhunibol Adulayadej Hospital would be a collaborating partner with the Faculty of Medicine, responsible for the clinical teaching of medical students from the new programme. Planning committees, on educational preparation for medical

students, student selection, curriculum development, and programme evaluation, were formed; and workshops, seminars and lectures, some of which were conducted by foreign consultants, were used in preparation for the admission of 30 students in 1988.

For example, there were workshops on student selection, student assessment, tutor training (including 'how to write a learning module' and 'the role of the tutor within the curriculum and implementation of learning problems in different learning sites') and programme evaluation. There was a seminar on 'resolution of learning processes in the CTPB curriculum', a demonstration of evaluation instruments and implementing methods, a panel session for the discussion of the 'progress of development of the CTPB programme' (which was attended by 400 staff members), and a lecture on 'new approach in clinical education'. The curriculum, which was fully developed by February 1988, underwent two trials, first with staff members and later with a group of 120 second year medical students who were at the same level as the first year CTPB students.

The complete CTPB programme was approved by the higher authorities of the University, including the Faculty Board, the CU curriculum committee, the University Deanship, and the University Council, before the end of 1987. The Thai Medical Council, which controls the standards of medical practitioners, endorsed the programme in early 1988, and finally the Ministry of University Affairs approved the innovative track. The CTPB programme was officially opened in May 1988.

The curriculum

The curriculum is aimed at producing medical graduates with problem-solving, critical thinking and self-directed learning abilities, and implements problem-based learning with the integration of basic medical sciences, clinical sciences and community experiences. The curriculum covers five years in three phases, and is based on a combination of primary health problems, Thai medical standards for medical practitioners, and the Faculty's educational objectives.

The first phase of training, which occupies two and a half years, takes place at Chulalongkorn University. This phase consists of ten blocks in which basic medical sciences are emphasized. The training in the first block covers the problem-based learning process, critical appraisal, computer application in medicine, evaluation and clinical experience. Trauma, infections and inflammation, psychology and behavioural science, oncology, health administration, reproductive health, growth and nutrition, environmental and occupational health, degenerative disease and the process of ageing, and medicine and surgery are

the topics of the other blocks in phase I. Training in community medicine threads its way through all blocks.

Phases II and III, which together occupy two and a half years, take place at Bhumibhol Adulyadej Hospital as well as at other hospitals and health centres. These phases emphasize clinical medicine and community medicine, and the students are rotated to experience all levels of care – primary, secondary and tertiary. Student activities in the community are integrated into each block, and occupy at least three hours each week. Students also practice essential clinical skills. Subjects such as administration and professional electives, which cannot be arranged in sequence within the blocks, are incorporated where appropriate.

Innovations and concurrence with ROME targets

Although the CTPB curriculum is similar to other medical curricula, the methodology and learning processes used are quite different from the conventional processes. The CTPB curriculum encourages students to become active learners rather than passive learners, and combines integration and self-directed learning. The programme also utilizes problem-based learning, in which tutors introduce samples of problems commonly found in the local communities. The students analyse cases to identify learning objectives and then find answers via resources such as text books and other reading materials, audio-visual materials, computer-assisted instruction, and the skills lab.

In these aspects (integration, self-directed learning, problem-based learning, and the emphasis on community medicine) the CTBP curriculum corresponds to ROME targets. As well, the curriculum is based on, amongst other things, primary health problems, and during training the students are exposed to real life situations in the community so that they develop skills relevant to the local health needs. This is also in conformity with ROME targets.

Another ROME target which has been attended to in the new programme concerns the development of human resources. Workshops, seminars and lectures, some of which were conducted by foreign consultants, were held for purposes of staff training prior to implementation of the new curriculum. Changing the attitudes of staff members was tackled through provision of information on new approaches to medical education in other countries.

Selection of students

Student admission procedures were established over a period of thirteen months by a student selection committee consisting of 22 members from the Faculties

of Medicine and Education and from Bhumidol Adulayadej hospital. It was decided that applicants were to pass a number of tests including a physical examination, an academic achievement test on basic subjects for the premedical level, an English language test, a mental health and personality examination, an aptitude test, a problem-solving ability test, and an interview. Applicants were also to be of Thai nationality and not older than 25 years. They should also have a bachelor's degree or equivalent in any subject except health sciences (those who have a bachelor's degree in health sciences can apply only if their institutes need them to join the project), with 26 credits in basic sciences, have no less than a 2.5 grade point average all through their previous studies, have good personality and behaviour, and have the intention of giving medical services to the community. This recruitment process emphasizes the students' competence and responsibility to study by themselves.

Nineteen students were admitted in the first batch, and 12 in second batch. Students who choose the track do so because the subject areas of their first bachelor degrees have limited or restricted future career structures (eg. biology, microbiology, physics, chemistry), and because of the better job opportunities and better job satisfaction that come with being a doctor.

Learning resources

The learning resources committee planned and collected the self-directed learning materials, as required by the subcommittee of each block. Learning materials include reading materials (books and journals), audio-visual materials (charts, slides with manuals, slides with synchronized audio tapes, audio tapes and video tapes), computer assisted instruction (CAI) materials, and a skills lab with manikins and real objects.

The Innovative Medical Education Unit (IMEU) (which is the part of MEU concerned with the New Track) is responsible for producing and collecting the materials for the skills lab and for administrating it. Reading materials, audio visual resources and CAI are housed in the library, and are mostly in a combination of English and Thai (CAI are totally in Thai). The skills lab offers the students practice in clinical skills such as physical examination, blood examination, and venepuncture, as well as communication skills. The skills lab is run by the Clinical Experience Committee, who assign a resource person to supervise the students.

In addition to the resource materials, curriculum guides, student guides, tutor guides, learning modules and tests are also produced by IMEU.

Student evaluation

Evaluation of students is based on observation by tutors and peer feedback. In phase I there are two evaluations per block. Paper/pencil tests such as modified exam questions (MEQs), objective structured clinical examinations (OSCEs), and triple jump are used, but it is too early to produce a conclusive result as to the use of these measuring instruments. Multiple choice questions (MCQs) constitute a small part of all tests.

Evaluation of the Programme

The learning modules have been shown to be usable. The students are able to follow the student guides and form hypotheses, learning objectives and learning issues. Students consult books extensively but slowly, especially those in English. The skills lab is used only moderately by the students, partly because they have little spare time to practise and they feel that such practise doesn't help them to pass their examinations, and also because they are given few specific assignments to carry out in the skills lab. However, they show great interest in practising physical examination with real human subjects.

Student interaction has been seen to be good, and better than is normal in Thai students (who are usually passive). A study to observe the interaction between teachers and new track medical students in the 1989 academic year (total of 31 students in two batches) showed the CTPB medical students to be active participants and responsible for their own learning.

Overall, the students are excited with the learning process and very enthusiastic to learn, and so far they have passed the examinations satisfactorily. However, the students find the early phase of Phase I to be arduous, time-consuming and often confusing. They find it very hard to adjust to the self-directed learning methods that Phase I demands. This adjustment period lasts from three to six months. The language (English) is also an added difficulty for them as they have to look up so much on their own. Many of them feel that they would have chosen the regular track if circumstances had permitted, even if this had entailed a longer period of learning.

Problems Encountered with the New Track

Problems with staff

At first, some tutors were not clear of their role, and many misunderstood their role and function. With traditional methods of teaching, the role of the teacher is that of speaker, but this is not so in the case of innovative learning methods.

This change in the role of a teacher requires adjustment on the part of experienced teachers. Other misunderstandings of the teacher's role led to teachers and resource persons missing their teaching groups because of lack of punctuality. Such problems have now largely been ironed out.

Problems with students

Students find that they need a lot of time for self-directed learning. They feel that the recommended reading is a problem because there are too many books to be read while their pace of reading English is slow. This problem was considered by the staff and, although they understood the problem, it was felt that students should not be in the programme if they could not cope with the work. Such problems arise in the first year, but in later years the students are able to adjust.

Despite the fact that more mature students (graduates of science and about four years older than the regulars) are purposely chosen to minimize the difficulty of following the self-directed learning style, the students find it hard and painful to adjust to Phase I. This traumatic adaptation takes them three to six months. There is also a sense of insecurity among these students, who feel that students from the regular stream have a distinct advantage over them as they have their lectures 'done' for them and all appropriate material chosen and important content highlighted. CTPB students feel that insufficient time and the handicap in English are serious drawbacks.

Another problem that has emerged concerns the fact that all the students are very wealthy, because only the wealthy can afford to do a second degree (students being recruited on the basis of their first degree). Because the students are elite, they are not familiar with poor communities and do not willingly volunteer to work amongst them.

Recruitment of suitable students has also proved to be difficult. The new track was planned to cater for 30 students per class, but in the second year only 12 suitable students could be recruited (with 19 recruited in the first year).

Problems with resources

Some problems have emerged with respect to the teaching materials. Evaluation of the first block indicated that the subject matter of the tutor guide was insufficient in scope and depth. Problems with human resources include the fact that there are not enough supportive high calibre staff.

Impact

This innovative programme is as yet too new for there to have been any assessment of its impact.

Discussion and Conclusions

Several factors may be considered to have been of importance in the success of the New Track. These include the meticulous and skillful planning that took place (the whole plan in complete detail, with partially tested curriculum, was completed in one and a half years) and the successful mobilization of resources. The methodical and coordinated use of resources, using economic and professional expertise from both inside and outside the country, and the strong infrastructure were also important. As well, the strong and efficient support staff, who documented and coordinated committees, was essential in getting the programme off the ground so rapidly.

The limited amount of time available may also have been a factor in part responsible for the success of the New Track. A spirit of participation prevailed amongst committee members and amidst the confusing atmosphere, despite the tension and confusion which resulted from the limited amount of time available to the majority of committees and subcommittees and which caused some committee members to quit.

Overcoming the resistance of staff members is one of the main obstacles faced by innovators of medical education. Because of this, it is easier to set up a new innovative medical school than to change a traditional one. The attitude of the whole staff towards the innovation should be positive. Changing the attitudes of staff members can be approached in several ways which include: communicating to staff members that the idea of change is to improve the product (and is not because the product has been below standard, or that the change is just a fad, or that the old programme was boring); making the staff feel that the change comes from their own decision, and not from any authority (educational leaders should keep boostering the idea but should not push it too hard); using experienced outside educators, who should enter the scene at appropriate times; and allowing staff time to digest the idea during the development process (tension and the departure of some staff members from the programme will occur when results are expected too quickly from them).

In Chulalongkorn University, the strategic plan used to reduce the resistance of staff was to call in all staff and get them involved in the process, and to ignore hard-core individuals. In this way, about one third of the 400 staff members became involved in the early stages of the programme, and the extremely busy

work schedule helped to overshadow any resistance. Once the staff had agreed to the proposed changes, development of all aspects of the programme (such as curriculum development, tutor training or programme evaluation) proceeded at the same time. In this instance at Chulalongkorn University, the process of 'learning by doing' worked best for the staff, although whenever they needed help it was provided immediately. The majority of preclinical staff who became involved in the development of the new track realized that the process was quite effective and efficient, and very soon they began to improve their whole curriculum, teaching method, and evaluation process.

The success of the New Track has resulted in other medical schools becoming interested in the programme. Also, within Chulalongkorn University, the idea of reforming the conventional programme and MESRAP into a similar innovative track has been launched.

Climate for Educational Change

Of all the countries in the Region, Thailand is perhaps the most innovative in the medical education change process, and measures for change have so far met with a fairly high degree of success. Perhaps final consideration should be given to the reasons why CU is able to implement and sustain innovations.

These reasons include the presence of an active medical education unit (MEU), which has played a pivotal role in starting ideas as well as in implementing them. MEU also arranges for visitors to come from all over the world at the rate of more than one per month, while obtaining help towards travel expenses from aid agencies. In this way CU staff are kept very much up-to-date with current events in medical education.

Secondly, good leadership has been important in the educational change process. CU has a good nucleus of deans, rectors and heads of department, as well as sound finances with which to change things. New programmes can therefore be launched without the consent of the government. Also, leaders of medical education in the country, with their openness and farsightedness, have given MEU and other ideas of change a fair chance and support.

As far as human resources are concerned, CU has more than many other medical colleges. In the medical faculty the staff to student ratio is 1:3. Other reasons for the success of educational change include the good communication between MOPH and CU, which is founded on good personal communication. As well, the fact that the universities in Thailand are decentralized means that each is capable of pursuing its own initiatives and changes.

Finally, there are cultural reasons for success, and perhaps the most crucial feature is the supporting and nurturing environment and culture within which the above factors must operate. The Thai culture tolerates initiative, innovation and experimentation, and the openness and atmosphere of freedom that prevail in the country keep alive ideas of innovation and change. In Thailand, leadership utilizes power but not force. This is consonant with the culture of Thailand, where, before the advent of democracy 50 years ago, the king or other authority could never be rebuked. University staff are therefore willing to go along with a project that has been launched even if they do not agree with it.

As far as the future is concerned, from 1994 onwards the best components of all the three tracks (regular, MESRAP, and the new track) of Chulalongkorn University will be combined into one programme. Reasons for this are several. It is easier for the staff to cope with one programme rather than three. Also, experience has shown, for example, that some subjects take up a lot of time in PBL and therefore teachers may decide to lecture in these instances. Students will still include those from rural areas and those already with Bachelor's degrees, and each class will consist of about 180 students.

3

The Institute of Medicine, Tribhuvan University, Nepal; Designing a Country–Specific Programme

Introduction

NEPAL is a small, landlocked country of 147 181 square kilometres. It stretches from the lowland terai, at 100m above sea level, to the top of Mt Everest which, at 8848m, is the highest point on earth. The country thus encompasses the greatest range of altitude of any country on earth. A large proportion of the country's population lives in valleys at altitudes of between 1000m and 2000m above sea level. Because of the rugged nature of the terrain, the difficulties in communication, and the need to find ways of persuading trained health personnel to work in rural areas, Nepal has developed a unique system for training health personnel.

The singularity of this system stems from the fact that middle level health workers are eligible for entry into the medical training programme once they have completed three years of service as middle level workers in rural areas. All middle level and certain categories of basic level health personnel, as well as undergraduates and postgraduates, are trained under the Institute of Medicine (IOM) of Tribhuvan University. Categories of middle level personnel trained at the Institute include health assistants, staff nurses, laboratory technicians, radiographers, pharmacy technicians and ayurveds. The Institute of Medicine works closely with the Ministry of Health, particularly in terms of manpower, and training programmes are temporarily suspended when sufficient manpower has been produced to satisfy the needs of the country, thus avoiding unemployment of graduates.

Training of health manpower first began in Nepal in 1927, with training for basic level Ayurvedic (traditional medicine) practitioners. In 1934 the Civil Medical School was opened for training compounders and medical dressers. After 1950 (and the advent of democracy) a wide range of health care institutions was established, including a nursing school in 1954 (with WHO assistance) and a health assistant training school in 1956. In 1962, to augment the preventive care services in rural areas, including maternal and child services, training for auxiliary health workers (AHW) and female health workers began. Finally, in 1972, the Institute of Medicine (IOM) was established under Tribhuvan University. This institute is under the Ministry of Education (in other Asian countries similar institutions are under both the Ministries of Health and Education), whereas previously all health manpower training institutions had come under the Ministry of Health. The Institute of Medicine has twelve campuses, as well as two private ones for nurses, situated in different parts of the country, in which the various types of health worker are trained. The undergraduate MBBS programme is based in the Kathmandu campus.

Undergraduate Medical Education first began in Nepal in 1978. The four and a half year MBBS programme is organized in three phases, and is followed by a one-year internship. The launching of the MBBS programme was preceded by a health survey of three districts in Nepal, which indicated the needs to be addressed in the curriculum. The curriculum is also oriented towards the job description for medical officers working in district hospitals. The Ministry of Health has been involved since the beginning in all activities of the MBBS programme, including curriculum development, planning, and conduction of training, and today members from MOH help constitute the Faculty Board.

The needs of Nepal stem from the fact that the country is considered to be one of the Least Developed Countries, and its health problems are characteristic of a low level of socioeconomic development. The population growth rate is 2.5 per cent and Nepal has the lowest arable land to population ratio in the developing world. In 1987, 40 per cent of the total population was reported to be living below the poverty line. Infant mortality is among the highest in the world, and is currently reported to be 128 per 1000 live births. The under-five mortality rate is 197. Malnutrition in children leaves them susceptible to diarrhoea and acute respiratory infections. Morbidity patterns in the country are related to environmental conditions such as lack of safe water supplies, sanitation and hygiene. Tuberculosis and leprosy are endemic and malaria occurs in the plains and low hills.

Nepal's health delivery system has been designed in such a way that the rural community is served by a large number (816) of health posts scattered in rural areas, each serving 9000 (mountain regions) to 19 000 (hill regions) to

50 000 (terai regions) people (in 1991). All preventive, promotive and curative services are provided through the health posts. These health posts are manned by middle level health assistants. Secondary health care is available from the health centres, which are manned by middle level health workers and doctors. In 1991 each health centre served 51 000 people. Tertiary health care is provided through the hospitals, of which there are 111 (in 1991), each serving, on average, 169 000 people. In 1991, there were 583 rural posts for doctors, of which only 118 were filled (whereas nearly all of the 334 urban posts were filled).

The MBBS Programme

Initially, 22 students were admitted to the MBBS programme each year. This was subsequently increased to 30 and then to 50. The first students of the programme graduated in 1984.

The Aim of the Programme

The aim of the programme is to produce doctors who will serve as medical officers in rural areas of Nepal for at least four years, where they will have wide-ranging responsibilities.

Curative responsibilities of doctors in rural Nepal include diagnosis and management of common diseases, referral of patients, and handling of emergency situations. Preventive responsibilities concern maternal and child health/family planning, environmental health, malnutrition, health education, school health care and communicable diseases control. Administrative and other responsibilities include the collection and updating of demographic and epidemiological data; planning, programming, implementing and evaluating district health care; functioning as leader of the health care team; and awareness of the organization of health services, health regulations, and indigenous medicine practices.

The Curriculum

As mentioned above, the curriculum is based on the common health problems of Nepal and on the competencies expected of a district doctor. Foreign consultants helped in the formulation of the curriculum, which was evaluated in 1978. Workshops were held, during the initial stages at least, to help staff develop teaching skills in problem-based learning and self-directed learning as well as in integrated approaches to teaching and in evaluation. The MBBS course is organized in three phases.

In phase I (two years), a large proportion of time is spent on community medicine, which includes biostatistics, environmental health, epidemiology, nutrition, mother and child health, health education, medical sociology and demography as well as practical work including community diagnosis and physical examination of patients. Phase I also includes the study of anatomy, physiology, biochemistry, pathology, and pharmacology, as well as clinical examination and history taking, according to systems (respiratory, cardiovascular, gastroenteric, metabolic/endocrine, haemopoietic/immune, urinary, reproductive/growth and development, muscular/skeletal, and neuro/psychiatric).

In phase II (one and a half years) the teaching is centred around general medicine (including dermatology and psychiatry), general surgery (including ophthalmology, ear, nose and throat, orthopaedics, dentistry, and anaesthetics), paediatrics, obstetrics and gynaecology, forensic medicine, and community medicine (especially epidemiology). During this phase the students also work in the various types of health team and are prepared for shouldering medico-legal responsibilities.

Phase III (one year) involves both hospital-based and community-based experiences, and the students take increasing responsibility in all aspects of patient care. Management skills development is also part of phase III.

The one year internship is composed of three months experience in medicine and in surgery, two and a half months in obstetrics and gynaecology, and one month in paediatrics, as well as short attachments in ophthalmology, ear nose and throat, family planning, and casualty work.

Innovations of the Programme

Innovative aspects of the MBBS programme include the strong emphasis placed on community medicine, a curriculum based on integrated teaching and problem-based learning, and admission criteria whereby trained middle level workers with three years of experience in rural areas are eligible for entry into the undergraduate programme. There have been successes and failures in each of these areas.

The most successful innovation relates to the community medicine component of the programme. Overall, community medicine occupies 23 per cent of time in the four and a half year course. This is a greater percentage of time than is allotted to community medicine in other medical school undergraduate curricula. Students are introduced to community medicine from the beginning, and the discipline occupies their attention for 50 per cent of the time in the first year. Work in the field during the first year includes the development of survey

documents, followed by the implementation of the survey and initial analysis of the data obtained. The students also make presentations of their findings to the community. While in the field, the students receive only guidance from university staff. In the second year very little time is spent on community medicine, although the thread continues. During the third year and first part of the fourth year, the community medicine component occupies 15 to 20 per cent of time, and includes a family health exercise (in which the students work on five clinical cases including one infectious disease, one non-infectious disease, a mental handicap, a physical handicap, and one case of their own interest), an epidemiological exercise (where they are given a problem which is investigated in the field), and training in applied epidemiology of communicable and non-communicable diseases. In the final year the percentage of time occupied by community medicine is again 50 per cent. In this year there is intensive training in the management of health and medical problems, including health systems research and systems analysis, and as well the students are sent for one month each to one general hospital and two district hospitals where they train in all departments and programmes. The students also undertake a planning exercise, in which they plan, phase, and budget a programme (such as an MCH programme) for a community.

There has been far less success with the implementation of integrated teaching. It was intended that teaching should be integrated in various ways, such as basic medical science with clinical medicine, curative medicine with preventive care, and the four sciences of anatomy, physiology, pathology, and pharmacology with one another according to the systems of the body. Although attempts were made to integrate the curriculum in these ways for one and a half years, the curriculum turned out to be more coordinated within the system rather than integrated. Today, the most integrated part of the curriculum is the Community Medicine component (see below).

With problem-based and self-directed learning approaches to teaching there has been even less success, because of the problems outlined below.

One other innovation of the programme, that of allowing middle level health workers to proceed to MBBS training, has, on the whole, met with success, although it was the first innovation to undergo change. Entrants for the MBBS programme were originally intended to be drawn only from the ranks of paramedical health workers, but opposition to this led to a compromise whereby lateral entry by students with a certificate level science background was allowed. Now the intake for the MBBS course is 50 per cent paramedical personnel and 50 per cent basic science students. Lateral entry students have to do a preliminary community-oriented year during which they work in rural health posts (thus completing five and a half years of study before their internship). So far it is not

possible to compare the products of the two streams of students, as the first intake of lateral entry students has not yet graduated. The success of the innovation, however, can be gauged from the fact that the attitude of doctors towards lower level paramedical workers has changed, because many doctors have emerged from these ranks. Doctors no longer have a feeling of superiority towards their paramedical colleagues. This is of obvious advantage in team-work.

Student Evaluation

Evaluation of students is mixed. Multiple choice questions (MCQs) are used for the entrance exam. Coursework is evaluated using a mixture of MCQs, objective questions and subjective questions.

Postgraduate Medical Education

A number of postgraduate courses are currently being conducted by the Institute of Medicine.

A postgraduate training programme in family medicine, for physicians who work in district hospitals, was developed jointly with the University of Calgary in Canada. This is a three year programme, as is the postgraduate programme in ophthalmology.

Other postgraduate courses include the two year diploma course in radiology, and the one year diploma programmes in otolaryngology, gynaecology and obstetrics, child health, and anaesthesiology. There is also a two year master's programme in public health. Other master's degree programmes are in the planning stage.

Impact

There has been no objective analysis of the impact of IOM or its graduates. By the end of 1992, 169 graduates had been produced. As mentioned above, the products of IOM are community-oriented. They are in general highly motivated and disposed to work in rural areas. As students, they enjoy the community postings and feel that they benefit from them. A few of the graduates have distinguished themselves working in rural areas.

In comparison with doctors trained abroad, IOM graduates are much more suited to working in rural Nepal and are much more inclined towards community work. Not only have they received relevant training, but they have also developed

the necessary attitudes for working in rural areas. They feel comfortable working in district settings and devote more time to public health than do graduates from abroad. Evidence for the greater suitability of IOM graduates to Nepal conditions can be gathered from the fact that, in general, IOM graduates persevere for longer in rural settings than do doctors trained abroad, and have caused less trouble to their employer, the Ministry of Health. This is not to say that IOM graduates are necessarily better doctors than those trained abroad, or would be better doctors in more traditional settings, merely that they are more suited to working in rural Nepal. However, there is no documentary support for this, it being a subjective impression only. The Ministry of Health finds that the products of IOM provide better services than do graduates trained abroad. In general, the communities are also happy with the IOM doctors.

Another distinction that can be made between IOM graduates and those trained abroad concerns team-work. IOM graduates, because of their backgrounds as paramedical workers, do not have superiority complexes and work well with other members of the medical team, as compared to graduates trained abroad, who may have superiority complexes. This again is a subjective observation.

Therefore, in general it can be said that IOM graduates perform better in rural Nepal than do graduates trained abroad, mainly because they are more community-oriented. The IOM MBBS programme is now receiving recognition abroad, and graduates are recognized by India, Pakistan and Bangladesh, while other countries, such as UK, Japan and USSR, accept IOM graduates for higher studies. But, for the reasons outlined below, the MBBS programme has not had an impact on the problem of maldistribution of doctors in Nepal, and in 1991 only 118 of the 583 rural posts for doctors were filled, whereas almost all of the 334 urban posts were filled.

Concurrence With ROME Targets

The IOM MBBS programme accommodates many of the ROME targets. Establishment of the programme involved, and still involves, intercountry cooperation and exchange of information and experience, particularly with the University of Calgary. As well, the help of WHO and other international agencies has been enlisted for such things as workshops and teacher training.

Selection of students concurs with ROME targets in that all MBBS students have previously undergone some field experience in which they have demonstrated their ability to live and work in rural areas. All graduates are expected to work

in rural areas for a few years after qualifying, and the MBBS syllabus is based on the job description of a district doctor.

Support from the government for the orientation of the programme was ensured through the help of teachers with influence. The programme is responsive and relevant to the country's needs particularly as far as the curriculum is concerned. The curriculum is based on common health problems encountered in the country, and includes learning activities to ensure that doctors take into account the social and ecological perspectives of health and disease as well as activities to help students develop competency in the totality of health care (that is, in promotion, prevention, cure and rehabilitation). Students are exposed to real life situations during their training. Although learning activities with teams of students to develop team-work skills in future doctors are not focused on during the course, graduates of the programme work well in teams because of their backgrounds as middle level health workers.

Self-directed learning, problem-based learning and integrated teaching are strategies used to ensure that the graduates are responsive and relevant to the country's needs. However, these teaching methods have yet to be properly utilized. A lack of staff awareness and a lack of coordination between disciplines has so far prevented these new teaching methods from taking root. More needs to be done with respect to staff development and training.

As far as the products of the MBBS programme are concerned, there is a lot of coordination between the University and the Ministry of Health regarding their employment. Training programmes at the Institute are suspended when enough manpower of a particular category has been produced. However, working conditions for graduates in rural areas need to be improved. As well, mechanisms for monitoring and evaluating the MBBS programme need to be developed.

Problems

A number of problems were encountered during the implementation of this innovative programme, many of which have not yet been overcome. The problems encountered fall loosely into the following categories:

Opposition

A lot of opposition to the innovative programme was encountered. Many people wanted a conventional medical school, and strong social/political pressure to modify the whole system was experienced in 1983. A Royal commission was set up to advise the government on a new policy for higher education. Prominent

and powerful people connected with the university used their influence, through the written and spoken word, to persuade critics of the innovative programme to give the system a chance. Proposals were freely circulated so that discussion was open and, through reasoning and patient explanation, critics gradually became involved in the arguments and ultimately a consensus was reached. As everyone had participated in the discussions and the issues were not forced, the commission finally agreed that the innovative programme should remain as it was.

However, pressure from high level health officials and sections of the public was responsible for one change in the innovative programme. This was the compromise to allow lateral entry into the MBBS programme by students with school high qualifications in science.

Teachers and Teaching

Problems with the implementation of integrated teaching have not yet been overcome. Although course units based on integrated teaching were designed in the beginning, there is currently very little actual integrated teaching in the programme, although the community medicine component is perhaps the best in this respect. Similarly, problems with the implementation of problem-based learning (PBL) have not been overcome. Probably the main obstacle to the introduction of both integrated teaching and PBL is that only a few of the IOM teachers have experienced these two innovative teaching methods first hand, and the staff therefore are not really aware of what is involved. The teachers have all been trained in traditional ways, and, not being teachers by vocation or training, do not know how to evaluate or examine in the integrated approach. Currently, a dozen years or so after the initiation of the programme, the teachers are still not ready to teach in innovative ways, although they are more prepared than at first. They find that teaching in the PBL and integrated modes involves more work (particularly preparation) than teaching in the traditional way. Integration is difficult in that it requires a lot of coordination and cooperation with other teachers and departments, and it is easier, at least in the short term, for individuals and disciplines to organize their own teaching. Perhaps another reason for resistance among teachers to innovative methods is that many teachers consider themselves to be good at teaching and not in need of improvement. It may therefore be essential for teachers to get first hand experience of innovative modes of teaching through participation in classes where innovative methods are working and through observing such programmes elsewhere.

Other difficulties with teaching stem from the fact that many teachers have been trained abroad, and two thirds of traditional training is not practised in

Nepal, where problems and approaches are different. The teaching has therefore become teacher-centred rather than student-centred, with the teachers teaching only what they know and as they think best rather than what the students want to know and according to the textbook.

Other problems were encountered in the recruitment of qualified teachers of basic sciences. The basic sciences have suffered a lot through lack of teachers and facilities, although the situation is gradually improving and a new building for basic sciences has been completed.

Other teaching problems emerged after completion of the new teaching hospital. This hospital is the most sophisticated in the country, is service-oriented, and has many referrals. After completion of the hospital, attitudes gradually became oriented towards curative services, and a deterioration in teaching began. Initially, when there were few staff, they were quite enthusiastic about the new programme, but as more staff became available, attached to the hospital, the relative workload became less and the teachers seemed to lose their motivation.

Students

Resistance to the innovative teaching methods also originated from students. Because the students had been 'spoon-fed' at school, they expected this to continue at university, and were at first resistant to doing things on their own. However, gradually they began to appreciate the advantages of such methods, which are now becoming established. Similar observations have also been made in other schools of similar background which have introduced innovations such as PBL.

Resources and Facilities

The lack of resources and teaching/learning facilities has been one of the main problems faced by the MBBS course, and is partly due to lack of funds. Clinical materials and learning resources such as books and audiovisuals are lacking, although the situation is gradually improving. In general there is sufficient clinical material for the most common disease conditions in the country, but not for the less common conditions. Thus a doctor may not encounter clinical material relating to less common conditions until he has been working for several years. The dearth of published literature and books specifically on the health problems faced by Nepal is another problem.

Other problems concerning resources and facilities occurred after the completion of the new teaching hospital, to which all resources were diverted.

Many facilities and resources initially intended for other purposes, such as a Public Health Laboratory, were ultimately redirected to the teaching hospital.

Health Services System and Conditions of Work

The above are all problems that emerged within the institute itself during implementation of the MBBS programme. One other difficulty that has become apparent concerns the health services system within which the doctors work after they have graduated. There is in Nepal a problem of uneven geographical distribution of doctors, most of whom prefer urban appointments. Doctors trained abroad, in conventional medical schools, find working conditions too difficult in rural Nepal and do not stay long in position (usually only a few weeks). Most of them have not received appropriate training in community medicine and are not motivated to work in rural areas. In contrast, the doctors produced by IOM are specially trained for community work, and are very motivated to work under rural conditions (this is a subjective impression gained by many people). However, there are other factors which come into play and, although IOM graduates may survive longer in rural positions than traditionally trained doctors, they too are not willing to stay for long, even despite their motivation and disposition for community work. The reasons include personal factors such as low salary, often no provision of accommodation, and lack of suitable schooling for their children. As well, working conditions are not stimulating. Each health centre is manned (or should be manned) by two doctors, but there is not enough work to occupy two doctors. The IOM students are trained for preventive services, but they find themselves giving only curative services, in both health centres and district hospitals. So they cannot do what they have been trained to do. In IOM they learn to identify problems and do surveys, but they are unable to do these once they are working. And as well there is always a lack of facilities and medicines. So the graduates soon become disillusioned and frustrated, and the problem of maldistribution of doctors remains. One possible solution would be to radically revise the whole health services system, including its structure and procedures of management. A health manpower study that has just been launched in the country is examining some of these issues for possible remedial action.

Discussion and Conclusions

In Nepal, opposition to the new teaching programme was overcome by frank and open discussion, and by compromising on a few issues. This approach was instrumental in getting the programme off the ground. The lessons to be learned

from the Nepal case study largely concern teachers, student selection and the vital necessity for supportive policies in the health services sector.

The Nepal experience indicates that, in order to be motivated, teachers should have first hand experience of integrated and PBL teaching methods and should be really interested in these methods. Opposition to new teaching methods can be overcome by using external experts to help orient teachers towards the new teaching methods. As well, in the case of Nepal, a strong commitment from the government, to change to integrated teaching and PBL teaching methods, would help to motivate teachers.

In order to be effective, a teacher of community-oriented medicine should have experience of working in rural areas. It is therefore useful if medical schools are responsible for certain districts and for providing a range of services from primary to tertiary. This ensures that all teachers have experience of working in rural areas.

One of the earlier problems encountered in Nepal was the difficulty of recruiting clinical teachers of basic sciences. It is important that trained teachers of basic sciences are available right from the beginning of a new teaching programme.

Other lessons to be learned from the Nepal experience include the fact that medical students of IOM who have come from the middle level health workers stream find medical school training hard for the first six months. Because of this, these paramedical students feel it is best if the lag phase between paramedical training and MBBS training is not more than two to three years.

One other point to be noted from the Nepal experience is that, even if doctors are community-oriented and disposed towards working in rural areas, certain standards of facilities, both medical and personal, should be provided in order to retain the doctors in these areas. The need for coordination of medical manpower development to ensure that the policies and practices in the health services sector meet with those of the production sector is clearly discernible in the Nepal experience.

4

Institutes of Medicine, Myanmar; Problem-Based Learning in a Conventional Curriculum

Introduction

IN 1992 the estimated population of Myanmar was nearly 42 million, of which about 86 per cent was living in rural areas. The country is divided into 14 states and divisions, which include a total of 52 township zones and 317 townships. There are altogether 370 village tracts and 65 320 villages or hamlets in the country.

The organization of health services in Myanmar is centralized and health care is administered through a chain of authority which issues from the central government level through the intermediate state and divisional level to the peripheral township level.

The central level (Ministry of Health) consists of the Department of Health, the Department of Planning and Statistics, the Department of Medical Research, the Department of Health Manpower, the Department of Indigenous Medicine, and the Department of Sports and Physical Education.

The intermediate level corresponds to the 14 general administrative regions (seven states and seven divisions) in each of which there is a state/divisional Director of Health.

The peripheral level comprises township and rural health services, the township being the basic unit for all administrative sectors. The Township Medical

Officer (TMO) takes charge of all health services in the area while the Township Health Officer is in charge of public health and related matters. Station Medical Officers head the station health units and are posted to station hospitals, which are upgraded rural health centres. Rural Health Centres deliver health care to rural areas, and each supervises three or four Rural Health Sub-centres (RHSCs). The Rural Health Centres come under the supervision of the TMO.

Maternity and Child Health services are provided by MCH centres in townships and urban areas. At the village tract level, in villages far from RHSCs, voluntary health workers help extend primary health care (PHC) to the community. Voluntary health workers, who are recruited from the community in which they eventually serve, include Community Health Workers (CHWs), of which there are currently 36 000 who have undergone a one month training programme, and Auxiliary Midwives, of which there are currently 10 000 who have undergone a six-month training course. A new category of volunteers is the Ten Household Health Worker, of whom it is planned to train 6000 annually.

However, utilization of Community Health Workers is poor. In 1989 a study showed that only three per cent of people seeking medical assistance had consulted a CHW, while 38 per cent had consulted a physician and 23 per cent a traditional practitioner.

Until 1989/90, the economy of the country was managed through the implementation of a series of four-year plans within the framework of a 20-year long-term plan. The People's Health Plans therefore each covered periods of four years. In 1990, after Myanmar had begun to follow a market-oriented economic system, a high level policy-making body (the National Health Committee) was set up to provide guidance and direction in all health matters. One of its policy guidelines concerned the development of a National Health Plan, to cover a period of two years as opposed to the four year periods covered by the People's Health Plans. Emphasis was placed on border area development.

Since 1989, the Department of Health Manpower has been responsible for the training of health personnel of all categories. Currently a total of about 500 graduates is produced annually from three medical schools, from a total intake of about 550 students per year. About 20 per cent of graduates are absorbed by the Ministry of Health, while the rest are employed in the cooperative and private sectors.

Medical education first began in Myanmar in 1924. The medical college in Yangon was at first affiliated to the University of Calcutta, although in 1946 it became the Faculty of Medicine under the University of Yangon. In 1972 this faculty became known as the Institute of Medicine 1 (IM1). In 1954 a second

faculty of Medicine was created in Mandalay, and is now known as the Institute of Medicine, Mandalay. A third institute of medicine, now known as the Institute of Medicine 2 (IM2), was established in Yangon in 1962. Several teaching hospitals and field practice areas are attached to each institute.

The MBBS curriculum is the same for all the three medical schools, and has been recently reviewed, during which consideration was given to PBL (Problem-Based Learning), COME (Community-Oriented Medical Education) and behavioural science components. The duration of training at present is 6½ years, with premedical training lasting for 1½ years, preclinical for 1½ years, para- clinical for 2 years, and clinical for 1½ years. There is a rotating internship of 1 year.

Medical Education Units (MEUs) are established in the three institutes, and serve mainly for teacher training and educational development. The MEUs have been the real instigators of change, and 25 to 30 workshops have been organized by the MEUs since 1980.

Continuing medical education consists of formal university training leading to postgraduate degrees and diplomas, as well as informal lectures, seminars and courses conducted by the Myanmar Medical Association.

In Myanmar, a Medical Research Congress is held each year, and Medical Education Seminars are held every four years. These seminars help to orientate medical education towards the health needs of the country, and for instance, the theme in 1970 was 'introduction of community medicine' while in 1987 PBL was recommended. In Myanmar, innovations are introduced gradually and seem to evolve naturally, so that there are no drastic changes.

Implementation of Innovative Changes

Educational development within the medical schools in Myanmar has been initiated by the MEUs and by staff members who have completed periods of training in educational courses overseas (such as Master's level courses in educational science or short-term fellowships at the Regional Teacher Training Centres in Peradeniya or Sydney). On their return to the country, these staff members have been responsible for carrying out teacher training activities at their own institutes and at inter-institutional level. Although few in number, these people have had a significant motivating influence on the creation of awareness, change of attitude and development of teaching skills among their colleagues.

Community-Orientation

Orientation of medical education towards community needs in Myanmar followed recommendations made at the third and fourth Medical Education Seminars (in 1970 and 1978). At the third seminar it was recommended that community medicine should be introduced into the curriculum, and should begin in the preclinical years. Community medicine was consequently first introduced into the curriculum in 1972, and a Community-Oriented Medical Education (COME) committee was formed in each institute. A recommendation concerning community exposure of students emerged from the fourth seminar, and during the 1980s several workshops and seminars were held in connection with the community-oriented undergraduate curriculum, in order to review it, identify problems in its implementation and recommend innovative changes. In 1987 it was agreed that integrated community-oriented education should begin in the first year of medical school. As well as course work in community medicine, during vacations students can volunteer to take part in on-going National Health Programme activities such as immunization programmes and latrine construction programmes.

Community-oriented training occurs as follows. In the preclinical curriculum, the concepts of medical statistics are introduced and the students carry out nutritional surveys in the local community. After collection and analysis of data, the students present their results as a report. Any nutritional deficiencies detected by the students are corrected by dietary supplementation as well as by education and advice to the community.

In the paraclinical curriculum, emphasis is placed on the prevention of common community health problems and on the promotion of community health care in the urban environment. Students visit health centres and participate in family care, occupational health and environmental health programmes. Residential training for three weeks in a township area gives the students an understanding of the organization of township health departments and of the role of different members of the health team at the peripheral level. There is also a family attachment programme where particular attention is paid to the impact of the environment, both physical and socio-cultural, on the family.

In the clinical curriculum the emphasis is on health care in the rural environment, and the students visit and work in rural health centres, under supervision. Each institute has a community practice area. In this way the students gain understanding of priority health problems in rural areas. In general, students prefer rural settings to urban ones for COME.

Finally, during the internship year, there are further residential programmes in both urban and rural areas. Internships are carried out under the supervision of health services personnel from the township health office and faculty from the medical schools.

Thus medical students acquire the competencies needed to work in any community setting. The extent to which the desired objectives of the community-oriented curriculum are achieved has not yet been determined, although an attitudinal survey of graduates was carried out to determine their willingness to serve in border areas. This survey indicated that eighty-four per cent of graduates (significantly more males than females) were willing to work in border areas, but that only 32 per cent would actually commit themselves to working in these areas. Many of the graduates are therefore motivated to work in difficult areas, but because of poor facilities (such as schools for their children) are not actually willing to do so. Recently, inducements for government employees working in border areas were introduced. For instance, the privilege of advanced study in the medical specialities is open only to government employees, and graduates who have served in border areas are given priority in the selection examination. Other inducements include a choice in subsequent areas of assignment, and a doubling of salary in the border areas.

Thus there is emphasis on community-oriented medical education in the undergraduate curriculum. As far as postgraduate training is concerned, the postgraduate course in IM1 leading to the degree of Master of Medical Science in Public Health includes an innovative community-based field group study.

Problem-Based Learning

In Myanmar, PBL is being introduced gradually. The first seeds of PBL in the country were sown in the early 1980s, when a small number of people obtained fellowships to study abroad in institutions where PBL was implemented. On their return to Myanmar, these forerunners, who had become enthusiastic about the use of PBL in medical education, passed on relevant information to their colleagues. Gradually other people became interested, but the process took a long time, and still some resistance is apparent among tutors.

It was not until 1987 that planning began for PBL, when, among other things, the Medical Education Seminar on Curriculum Review recommended that the problem-solving approach be used wherever possible, and that integrated community and problem-oriented learning should begin in the first phase of the medical curriculum in the premedical classes. All representatives of the three medical schools agreed to a certain amount of time being allocated to PBL.

Within a year, the recommendation concerning PBL had been approved by the Ministry, the University Senate and the University Council.

Although the use of PBL was agreed to in 1987, the actual implementation still remains to be done. However, during the three or more years that the institutes have been closed, a number of workshops have been held, often with the help of outside consultants. Initially, awareness-raising workshops were held, to expose tutors to the concepts and objectives of PBL. Subsequently there were tutor training workshops and workshops to develop PBL modules. These modules were tested on some students at a tutor training workshop in 1991. Since the modules were first tested, meetings have been held every two to three months to update and develop them further. To date, the modules, although completed, have been tried out only partially. Three modules have been developed for phase 1 premedical classes, one by each institute, on different topics. IM1 has developed a module on diarrhoea, IM2 a module on accidents, and Mandalay Institute a module on malaria. No PBL modules for preclinical classes have been developed in any of the institutes. However, PBL modules for clinical classes that have been developed elsewhere will be adapted locally as required by the institutes. In the new curriculum, soon to be implemented, 150 hours have been allocated for integrated community-oriented and problem-learning experiences in the first year, while in all subsequent years 'certain hours' are allocated.

In Myanmar therefore, PBL will be introduced gradually, and more will be introduced in time. Traditional teaching will continue, but will be supplemented by PBL throughout the curriculum, including in the premedical years. There will not be a total replacement of traditional teaching, at least not until tutors feel more secure with the new approach. The medical education programme will probably develop into something like that developed at Tufts University Medical School, where regular lectures are followed by the selection of problems related to the system being taught. In this way, the best of both systems of teaching will be utilized, and medical education will be problem-oriented (POME) as opposed to problem-based.

New Curriculum

The medical curriculum is uniform across the three institutes in Myanmar. When first introduced in 1923, the curriculum was hospital-oriented, as in British medical schools, and was of seven years duration. Since then the curriculum has evolved, and is now oriented towards producing doctors with a PHC approach.

Minor revisions to the curriculum were made between 1966 and 1982 as a result of recommendations of the medical education seminars. The first changes occurred when teachers and students felt that the premedical curriculum, at that time taught in the science faculties, included material which was not relevant and was of little use in the practice of medicine. The teaching of basic natural sciences was therefore transferred to basic science departments within the medical schools. Other changes that took place during these years included shortening and lengthening the duration of training, which is now six and a half years. Mathematics was introduced into the premedical curriculum following a recommendation made at the second medical education seminar. At the third medical education seminar in 1970, the institution of a core curriculum for each subject, integrated teaching where possible, and the introduction of community medicine starting from preclinical years were recommended and later implemented. Also, the third medical education seminar introduced the 'pre-block' period, in which clinical lectures precede full time attendance in the wards by the students.

Gradually medical educators and health services personnel became aware that many priority health problems in the country were different from those in the West, on which the curriculum was based, and that the existing curriculum was not relevant to the health needs of the country. Therefore the undergraduate curriculum began to be reviewed. Although there was no major revision of the undergraduate medical curriculum, a number of workshops and seminars focused on the topic. For instance, in 1982 there was a seminar to review the community-orientation of the undergraduate curriculum. Although community medicine was already being taught in all the institutes, it was sporadic and fragmented and not very effective. In 1986 there was a workshop for curriculum review and development which reviewed the curricula of preclinical, paraclinical and clinical disciplines, discussed the inclusion of management science in the curriculum, and took participants through the process of teaching by the problem-solving approach. The fourth Medical Education Seminar recommended reviewing and updating the curriculum with regard to clinical subjects; drawing up specific instructional objectives based on common diseases; early contact with patients and community exposure; introducing both behavioural and political sciences into the curriculum; using the multidisciplinary approach, problem-solving approach and integration where possible; and forming committees to implement the recommendations. It was also agreed that student assessment was in need of review.

Following this, curriculum committees in each of the institutes, which included members from all departments, were formed as a preliminary to drawing up the

new curriculum. The new curriculum, which has yet to be implemented (the institutes remained closed for some time), has been approved by the Ministry of Health, is of a total of six and a half years duration, and consists of three phases. Phase 1 concentrates on the 'normal' human being, phase 2 concentrates on deviations from the 'normal' human being, and phase 3 concentrates on correction of deviations of the 'normal' human being. The main innovative changes in the curriculum are the introduction of community-orientation and problem-based learning. Another significant change is the strengthening of the behavioural sciences component in phase 1. The behavioural sciences include such subjects as psychology, sociology and cultural anthropology, and have been incorporated into medical curricula following the realization that the behaviour of individuals and communities influences the occurrence of disease. In phase 3, a period of elective study has also been included, by decreasing the original premedical and preclinical phases.

In the new curriculum, the first year of phase 1 (1st MBBS) is premedical, and includes the study of Burmese, English, chemistry, physics, and biology. The second year of phase 1 (2nd MBBS) is preclinical, and includes the study of anatomy, physiology, and biochemistry. Phase 2 is paraclinical, and the first year (3rd MBBS) includes the study of microbiology, general pathology, and pharmacology as well as an introduction to clinical medicine and surgery. The second year of phase 2 (Final MBBS 1) includes the study of forensic medicine, preventive and social medicine, systemic pathology, medicine and surgery, and an introduction to obstetrics and paediatrics. Phase 3 encompasses the clinical sciences, and is of two and a half years duration. It includes a pre-block posting (of six months), a block posting of three months (in medicine, surgery, obstetrics and gynaecology, or paediatrics), an elective period of three months (when students choose their subject areas), a six-month posting in a township hospital, and two months back in the institute to consolidate experiences and sit the final examinations.

In the first MBBS curriculum, up to 150 hours (of a total of 1022 teaching hours) is allotted to integrated community-oriented and problem-learning experiences, held in parallel with the traditional programme. The teaching of behavioural sciences, within the PBL segment, also commences in phase 1 and continues as appropriate until the end of phase 3. In the remaining years, 'certain hours' are allocated to community orientation and PBL segments.

With regard to the examinations, 1st, 3rd and 4th MBBS examinations are to be conducted institute-wise, while 2nd and final MBBS examinations will be conducted on a common inter-institute basis.

Integrated Teaching

Among other things, the education seminar on Curriculum Review recommended that integrated teaching be used where possible. At present, integration takes place to a limited extent only.

Evaluation of Students

Student assessment is uniform across the three institutes. There is much formal and informal in-course assessment within each subject, department or clinical rotation. Thirty per cent of marks are allocated to class-work. 'Satisfactory performance' in class-work and a minimum of 75 per cent attendance in classes are prerequisites to candidature in the examinations.

Questions for the examinations are set at joint meetings, and the same chief examiners are used by each institute. Examination questions are largely of the recall type. Multiple Choice Questions (MCQs) are used by some departments, although there is a lack of uniformity in the type and format of these. Only a few departments have MCQ banks. The methods of assessment currently used are not suitable for assessing PBL and problem-solving skills. No decision has yet been taken as to how much of the 30 per cent of marks allocated for class-work will be allocated to PBL.

Student Selection

There are no special selection procedures for students. Selection consists simply of selecting the top 550 candidates from the list of candidates with matriculation who apply to the medical institutes.

Problems Encountered in Implementation

One of the problems encountered in Myanmar is that it is necessary to introduce innovations in all three schools at the same time. Most of the problems encountered relate to the implementation of PBL, rather than to the implementation of community-orientation or integration.

Attitude

Initially, the main problem with regard to PBL was the attitude of teachers, who were not convinced of the need for change. This attitude was not so much one of resistance as one of uncertainty concerning the superiority and practicability

of the new teaching method and the ability of the staff to teach in the PBL mode. Concerns of tutors centred around the facts that some tutors prefer to be more at a distance from the students (as in formal lecturing), that teaching in the PBL mode occupies too much time, that students may not learn enough, and that not all students are capable of PBL and self-directed learning because they are not all motivated sufficiently to work under their own guidance. Some tutors also feared that, if students were left alone to solve problems, they could reach incorrect conclusions that would go undetected because of the lack of expertise on the part of tutors (ie. in terms of content, when tutors are drawn in to areas other than their own areas of specialization).

After all the awareness-raising events, the majority of tutors have come to accept the concept of PBL and are willing to give the method a try. However, the change will be gradual, not total. Only some of the more senior teachers are still reluctant.

Module Construction

Confusion regarding PBL occurred because, after examining modules from different universities, it became evident that there is no universal concept of PBL. Tutors were very concerned about the content of PBL modules because they are aware that the direction taken by student discussions may wander and that there is a need to limit such discussions. Another cause for concern was the fact that the modules already constructed are horizontal and not vertical, and thus severely limit the thinking processes of students (who are always keen to move into clinical areas). Modules for the first year may be horizontal, but from the second year onwards should be vertical as well as horizontal.

Time

Introducing and establishing PBL utilizes a lot of time. This is a particular problem when more senior officers are involved, as, for instance, in Myanmar, where one of the main instigators of PBL was also chairman of 27 committees (and hence could not devote much time to PBL).

Resources and Facilities

One problem encountered in Myanmar in this respect was that of collecting together enough reading material and equipment for curriculum development and PBL. Background reading materials were gradually collected from anyone who had attended workshops or seminars and from visiting consultants. Apart from background materials, the institute libraries need to be equipped with

sufficient learning materials for PBL. PBL cannot be adopted completely until such materials are available.

Staffing is also a problem in Myanmar. Initially there were too few secretarial staff for the MEUs, and, as far as teaching staff are concerned, retirements caused difficulties (only two of the original eight instigators of PBL now remain). The student:teacher ratio in the institutes is also considered, by some teachers, to be insufficient for teaching in the PBL mode. This ratio currently stands at 9:1.

Student Representation

Another problem encountered concerns the fact that there are no student representatives on institute committees, such as the curriculum committee. It is easier to plan new curricula if students are represented on the curriculum committee, as student representatives can feed back comments on the suitability and acceptability of proposed changes to the committee. It is planned to implement student representation in the near future.

Integration

Difficulties in the implementation of integrated teaching in Myanmar stem from the fact that different departments do not have the same concept of integration. Most attempts at integration have merely involved matching the time scheduling so that, for instance, the anatomy of the heart is taught prior to teaching the physiology of the heart. But since some topics take longer than others, integration has not proved to be possible. However, with some subjects there have been attempts to integrate the teaching horizontally with clinical disciplines.

Impact

As the new curriculum, with a PBL element running through the entire course, is currently being introduced and no graduates have yet been produced under this programme, it is premature to examine the impact of these developments in the health services sector. The initial impact in the institutes of medicine themselves has been quite positive in that the staff as well as the students are showing very positive attitudes towards making the new curriculum work. There is enthusiasm among the teachers towards developing further problems for study, and the students appreciate the early opportunity to develop problem-solving and self-directed learning skills.

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What impact can be noted concerns the overall distribution of doctors and their abilities and attitudes towards working in rural areas. There are now more doctors working in rural areas than there were previously, although this is not necessarily a reflection of the community-oriented training. In order to encourage people to work in hardship areas (such as border areas), incentives were introduced. These include the provision of essential facilities and double salaries, as well as the fact that, after working for two years in a hardship area, a doctor is moved to another place. People who have worked in hardship areas also get more chance of postgraduate training or studying abroad.

Whether or not the fact that there is little problem of maldistribution of doctors in Myanmar is a reflection of the community-oriented training, there is no doubt that the community-orientation of students has led to definite attitudinal changes among doctors. Community-oriented training has now been conducted for 15 years, and tutors have long been impressed with the motivation of students returning from community experience. It is also likely that, because of this community-orientation and the fact that students as well as staff have seen that the practice of community medicine entails the tackling of problems, there is less resistance to PBL than there would otherwise have been. People have learned to see problems in their entirety, and not just in clinical situations.

Discussion and Conclusions

The introduction of innovations in medical education is always difficult because of conservative professional inclination. The forces hindering change have to be weakened, and trained medical educators can play a vital role in reducing these hindering forces. In Myanmar, there was at first a lot of resistance to PBL, but after all the awareness-raising activities people became less reluctant to change and the introduction of PBL became much easier. Teachers became more adaptable as they became less intimidated by PBL. Younger teachers were found to be more adaptable than more senior tutors. Some of those who were resistant became actively involved when they were put on subcommittees and into working groups. It is also likely that fifteen years of experience in community-orientated training helped to prepare teachers for change and PBL in that it created an awareness that community doctors must face problems and see them in their entirety rather than in their clinical divisions. This helped to reduce the resistance to PBL.

Important in initiating the use of PBL in Myanmar was the fact that several people in key positions went abroad to study and became enthusiastic about PBL. In this way a critical number of teaching staff (eight) became involved, which was sufficient to generate enough impetus for change. Also there were strong medical education units at that time in the institutes. Continuity is necessary for the implementation of innovations, and in Myanmar there has always been a core of people who were interested in community-orientation and PBL, and who have provided the necessary impetus for change. However, retirements and closure of the schools have slowed down this impetus.

Initially, awareness-raising workshops were held, so that tutors agreed in principle that the innovation (PBL) was a good idea. Before introducing PBL, teachers needed to gain confidence and really understand the concepts involved in this teaching method. Teachers need to be confident because PBL is 43 per cent dependant on tutors and 30 per cent dependant on modules, according to an analysis made at Maastricht. In Myanmar, workshops were used, for example, to provide tutors with training and awareness of the advantages and disadvantages of PBL. Training was aimed at convincing teachers of the need to stay in the background while teaching in the PBL mode, as opposed to doing all the talking according to their natural inclination (many teachers find it difficult to stay in the background and easily revert to traditional modes of teaching such as lecturing). Teachers must also learn to be flexible so as to be sensitive to the fact that students may want to go beyond the boundaries of a PBL module. PBL also requires a lot of coordination and cooperation between teachers, and plans need to be made regularly. This is another area where teachers must adapt.

In Myanmar, a cautious approach to the introduction of PBL is to be used, and the innovation (PBL) will be introduced gradually. Traditional teaching will be supplemented progressively by PBL if the method is seen to be working. This accommodates the feeling of insecurity among teachers using the new mode of teaching.

Potential constraints to the implementation of PBL include lack of money, materials, manpower and managerial skills. Some resources can be provided or organized by international aid agencies. Money is required for training teachers and for providing secretarial staff, computers, teaching aids, audio-visual materials, overhead projectors and the latest equipment as well as information about PBL and books for the library.

In Myanmar, for successful implementation, appropriate actions are aimed at gradual short-term and medium-term changes. Also important in implementation

is that there is strong support and commitment from the highest political authorities of the country. This is vital for bringing about change in medical education.

One other point emphasized by the Myanmar experience is that student representation as well as community representation on committees is very important, especially as regards the curriculum. With regard to community representation, it has been found better to use community leaders, such as those involved in social activities and MCH activities, rather than high-ranking officials. The latter do not really represent the community (at best only marginally) whereas the former really do represent the community and understand their problems.

5

Christian Medical College, Vellore, India; Community Health and Development in Medical Education

Introduction

THE Christian Medical College (CMC) in Vellore, South India, has been a pioneer of innovative medical education programmes since its foundation. The college is particularly concerned with the rural Indian population, and with approaches to medical education which are of relevance to rural people. One of the key strategies of CMC in recent years has been the development of the Community Health and Development (CHAD) programme. This programme was established by the Community Health Department (CHD) of CMC as one of several which integrate health and socioeconomic activities.

The Christian Medical College and Hospital in Vellore was founded over ninety years ago by Dr Ida Scudder, since when the principle of community care combined with curative excellence has been part of the philosophy of the college. The college aims to train health personnel to function both in large hospitals, with sophisticated facilities, and in small rural dispensaries, with limited facilities and equipment. It also aims to provide care, both in it's hospital and in the villages, of high standard for the people of the region. Over the years CMC has grown both in size and quality, a phenomenon which has been ascribed to the 'missionary zeal' of those who work, or have worked, in CMC.

CMC now takes responsibility for providing primary health care to over 250 000 people, and to a further 150 000 or more people it provides these services in conjunction with government staff. The populations served by CMC are distributed in slum, rural and tribal communities, and two entire community development blocks – Kaniyambadi and K.V. Kuppam – are provided with integrated

health and development programmes. The CHAD programme was launched to cover Kaniyambadi block, and the RUHSA (Rural Unit for Health and Social Affairs) programme is associated with K.V. Kuppam block. The RUHSA programme, although part of CMC, is not part of the Community Health Department, and it has a less elaborate health and medical input but a greater emphasis on socioeconomic development (including animal husbandry and agriculture) than the CHAD programme. CMC has also recently undertaken the development of health care services in Anaicut block using the existing government facilities. Together these three blocks constitute those blocks assigned to CMC under the ROME programme (in which each medical school was given responsibility for three blocks).

The communities in the area covered by the CHAD programme (Kaniyambadi block) have substantial harijan (scheduled caste) populations, who are normally landless and often denied opportunities to train for skilled jobs. Forty per cent of the adult population in the block is illiterate (nearer 70 per cent among women). Each village has its quota of physically, mentally or socially handicapped people, such as the blind or crippled, leprosy victims (cured or not), and those suffering from cerebral palsy (or other evidence of birth trauma) or chronic illnesses associated with low standards of nutrition and health education (such as tuberculosis and rheumatic heart disease, which are common in the area).

In 1957 the Community Health Department of CMC instituted a programme known as the Family Health Advisory Service. This programme gave medical students practical experience in working in villages with families. The programme, however, was ultimately found to have limitations, and did not greatly interest the students or adequately prepare them for basic community health care. After 1975, therefore, the curriculum was reorganized under the CHAD programme to give medical students the type of experience that would better equip them to meet India's primary health care needs.

The CHAD teaching programme of the Community Health Department, which is community-based, problem-oriented and student-directed, aims to educate medical students and others in the realities of primary health care in rural and urban settings. Many CMC graduates go into mission hospitals where there is only the minimum in terms of equipment and laboratory facilities and there are no nearby tertiary hospitals to refer patients to. Training for medical students in community health under the CHAD programme takes place in four phases, each of which has specific objectives and is designed to build on the experience gained from previous phases.

This chapter is concerned with the CHAD programme of the Community Health Department of CMC.

The CHAD Programme

Outreach Activities

Because of its philosophy that primary health care is inseparable from social and economic development, CHD runs development programmes for the 90 000 inhabitants of Kaniyambadi block. These outreach activities include agriculture and husbandry programmes (such as fodder farming schemes, dairy cooperatives, and poultry and sheep rearing schemes) which provide education, technical support, and financial and marketing advice through village-based agricultural extension workers. CHD also runs programmes in adult literacy and continuing education (aimed at increasing awareness of, for example, family planning or schooling) and balwadis (day-care centres where children under five are cared for while their mothers work). CHD is particularly committed to helping the women of India, and it's socioeconomic regeneration programmes, which largely concern women, have now been taken over by the Community Development Society (CODES). This society runs craft centres (such as the palm leaf centres, the mat weaving centres, and the sisal fibre centres), women's tailoring units, a women's silk reeling unit, a women's steel fabrication and welding unit (where rural women are trained in gas- and arc-welding and metal fabrication), a women's masonry unit (where women are trained as masons), and an automobile repair training programme (the only CODES programme for men, in which youths from very poor families are selected for two years intensive training in car repair work).

Health Services

CHAD health services operate through a network of health teams. These health teams work closely with government services, and are responsible for implementing programmes in maternal and child health, immunization, nutrition, tuberculosis control, leprosy control, rheumatic fever and rheumatic heart disease, community psychiatry, family planning, community-based rehabilitation, sanitation, and health education.

CHAD Hospital, which is situated in Bagayam (near Vellore), acts as the base from which mobile health teams set off for the villages. Every week, each village is visited from Bagayam by a Community Health Nurse (CHN), and every two weeks each village is visited by a community health team, usually in a mobile clinic. This team includes a doctor, a CHN, and a community extension worker, as well as a community-based Health Aide and a part-time community health worker. Generally the team also includes an occupational therapist and/or physiotherapist experienced in community-based therapy for the handicapped.

Regular visits to each village are also made by the mobile leprosy team, with its doctor, nurses and supporting team of occupational therapist, physiotherapist and cobbler. Any problems are referred to CHAD Hospital.

The basic implementation of health programmes within the villages, and the monitoring of these programmes, is carried out by part-time community health workers (PTCHWs). Each PTCHW covers a population of 1000 to 1500 people, and is selected by the community in which she lives. The PTCHW treats minor ailments, conducts deliveries and reports births and deaths. She also keeps a check on morbidity cases, ante-natals, post-natals and under-fives. The Health Aide is also a community based person, but is a full-time, trained woman who normally covers a number of villages and a population of 5000.

As well as acting as the base for the mobile health teams, CHAD Hospital also acts as a training centre for village- and hospital-based personnel, with the highest priority being given to the training of interns, medical students, paramedicals and nurses. As well, short courses in health management and epidemiology are organized at the request of governmental and nongovernmental agencies. The hospital is also the base for CHAD's communication and monitoring centre, where information collected through the health teams is collated on computer. Essential statistics, such as births, deaths, peri-natal mortality and infant mortality are calculated, reviewed and discussed within various regular staff forums, and then fed back to the communities. About once a month, information gathered by workers is verified by an independent team to ensure completeness and accuracy, and is found to be over 95 per cent complete.

Medical Education

Although CHAD is an integrated health and development programme, the main justification for its existence is to provide community-based and community-oriented education for health personnel (including students of medicine, nursing and allied health sciences).

Training for medical students takes place in four phases:

Phase 1: This phase takes place during the first year of medical school and is known as the Community Orientation Programme (COP). The programme introduces the students to community diagnosis, health education, biostatistics and behavioural sciences.

Objectives of COP include creating awareness of: the social, economic and environmental statuses of rural communities and the influence of these factors on health and disease; traditional health practices; governmental and voluntary

welfare programmes for rural populations; and the role of various members of a health team. Other objectives are to provide the students with skills in: community diagnosis, organization of community programmes, health education for individuals and groups, and working as members of community health teams. The programme also aims to develop, in the students, attitudes of concern and compassion for the individual and the community.

The COP training is action-packed and lasts for three weeks. During this period the students live in one of the 68 villages served by CHAD, where they learn how to live in a village environment. This is an invaluable experience for the students, who mostly come from urban middle class backgrounds and have no experience of life in rural communities. They learn, for example, how to draw and purify water, how to prepare the available local food on an open fire, and how to construct toilet facilities and soakage pits to keep the environment clean.

As well as learning how to keep healthy under village conditions, the students also conduct house to house surveys of the village. In this they are helped by staff from various disciplines, while the whole procedure is organized and coordinated by the Community Health Department. Working in groups of two to three, the students carry out surveys covering demographic and socioeconomic conditions such as education, food habits and preferences, water utilization and sanitation, child-rearing practices, prevalence of and attitudes to disability, beliefs about health and sickness, immunization, the use of home remedies and the role of indigenous practitioners. Special studies are made of particular problems, such as the nutritional status of children or the prevalence of disability, anaemia or filariasis.

An important feature of the COP programme is that the groups of students are multi-disciplinary (and include dieticians, physiotherapists, occupational therapists, medical students and biostatisticians). In this way the students learn to respect the input from colleagues in other disciplines, which is essential to community- based health care.

The data collected are analysed with the help of staff, and the results are presented to the class. Also during the camp, the students present special case studies of individuals suffering from common illnesses (such as anaemia and tuberculosis) which they have identified themselves. Senior faculty members from various disciplines are present at the presentations, and help students to understand the socioeconomic roots and implications of the problems and the practical aspects of finding solutions in the village context. Simulation games are also used to reinforce some of the social issues the students have identified during their stay in the village, and, as the community is predominantly agricultural,

the 'drought game' has been found to be very useful. The period is therefore one of experiential problem-solving learning.

Other activities that take place during the three weeks include visits from guest speakers, who cover topics such as governmental health services, banking, agricultural bureaux and animal husbandry. This helps to lay emphasis on the vital part that agricultural and socioeconomic development have to play in the health of the community.

At the end of the three weeks the students conduct a health education programme based on the health problems they find in the community, thus providing an opportunity for feedback to the community. The students use information collected from the community, concerning beliefs about causes and prevention of specific diseases, as starting-points for education messages. Opportunities for health education also occur in the outdoor clinics which are held in the evenings, to which villagers are encouraged to bring their problems, and in the dramas and skits which are conducted by the students on subjects such as alcoholism, nutrition, and family planning. The culmination of the three weeks is a musical and dramatic event in which both students and villagers participate, which is chaired by village leaders and attended by the whole village.

Although students no doubt forget some of the factual input, follow-up studies have shown that they still retain attitude changes five years later. The whole experience of COP is apparently enjoyed by both villagers and students alike, and students often comment that three weeks is not long enough.

Phase 2: The second phase of training takes place in the first clinical year of medical school, and is known as the Community Health Training Programme (CHP-1). At this time the students are introduced to the government health programmes through CHD's close relationship with government services. CHP-1 also serves as an introduction to the principles of epidemiology and health management.

Objectives of CHP-1 include creating an awareness in the students of: the principles of epidemiology, health planning and health administration; national health programmes (particularly in primary health care); the common health problems of communities; and the utilization pattern of health services. Objectives also pertain to providing the students with skills in carrying out community surveys (cross sectional morbidity and mortality surveys); analysing and interpreting data; estimating vital statistics (such as birth, death and infant mortality rates); carrying out observation and time-and-motion studies, and interpretation of the data so obtained; health planning; and presentation of data using audio-visual aids (such as overhead or slide projectors).

This second phase of training lasts for two weeks, and incorporates lectures, classroom exercises and field exercises.

Field exercises include cross-sectional surveys of morbidity and mortality. In this exercise each class covers two or three villages (including the village that they worked in during COP) and the students work in groups of two. From the data collected, morbidity rates, susceptible age groups, sex-specific prevalences of certain diseases, birth rates, crude death rates, and infant and maternal mortality rates are determined. The utilization of health services, the distances that must be travelled to reach health services, and the cost of treatment are also assessed.

The students also study the types of health service available at various administrative levels, from primary health care services to secondary and tertiary care hospitals. From interviews with patients, they obtain information on how far the patients have travelled, the length of time they were ill before they sought medical aid, and the types of disease that are common. The different levels of health service are then compared with regard to the type and duration of illnesses treated and the distance travelled by patients.

A time-and-motion study of hospital organization is carried out to determine the waiting and service times at various points, for instance, at the pharmacy, the laboratory, the injection room or the doctor's consultation room. In this way, bottlenecks in the hospitals are located. The students also compare the patient load, the types of disease and the severity of disease found at different referral points, and learn applied epidemiology and management techniques.

Finally, on the basis of the data they collect and the lectures they attend, the students plan a programme concerned with a defined problem in a specified population, such as the organization of an MCH clinic, the integration of tuberculosis with leprosy control, the planning of a health information system for a district, or the planning of a secondary level care centre. The CHP-1 phase of training culminates in an evaluation of the students' knowledge of community health principles and elements of health systems research.

Phase 3: Phase 3 of the training (CHP-II) takes place in the second clinical year (the fourth year of medical school). This phase in the training is concerned with community based epidemiological studies and is of two weeks duration. CHP-II is preceded by six weeks of bi-weekly sessions during which the students plan the objectives of the study and the methodology they will use.

The main objective of phase 3 is for the students to gain experience in carrying out epidemiological studies, evaluating national programmes in the field

of health and development and organizing health education programmes within a community.

During CHP-II the students work in groups of five to eight. Two members of staff (including one from a relevant discipline other than community medicine) are assigned to each group as resource persons but provide only guidance to the groups, who otherwise work entirely on their own. The students either carry out an evaluation of the health status of a community of 1500 people or assess one of the national programmes. In this way they apply the knowledge and skills acquired in the first two phases of CHAD training.

The sort of problems the students decide to work on include common health problems (such as malnutrition, leprosy, tuberculosis, MCH, immunization), environmental issues (such as pollution due to industrialization) and social issues (such as child labour and education). The students set down their objectives before formulating and implementing plans for carrying out data analysis. On completion of the study, the students give a feedback of their analysis to the community. In this way the students gain further experience of health education in the community. Each group of students also formally presents a review of their project, including the objectives, methods, results and limitations, to which all staff and students are invited.

This phase of training ends with a student assessment of the programme as well as an evaluation of the students' changes in attitude towards rural medical care and the knowledge acquired as a result of the programme. Many students find this the most satisfying of the training phases because they find that the skills and knowledge they have acquired in the previous phases are useful and relevant, and that they have the confidence to go out and apply them, as well as the desire to do so. CHP-II therefore serves as a reinforcement of earlier training and as an exposure to health systems research.

Phase 4: The final phase of training is the intern programme, which takes place during the one-year compulsory internship. This phase of the training lasts for three months, during which the interns gain practical knowledge and experience of primary health care. The programme aims to prepare the interns as "basic doctors" (who can diagnose and treat common illnesses without the use of sophisticated laboratory aids and who know when to refer patients; who can perform simple laboratory tests and common minor surgical procedures) and to give them some elementary knowledge of community health practice.

Objectives of the programme are mainly related to reinforcing the skills, knowledge and attitudes developed in earlier phases which are concerned with community health practice (such as community diagnosis), health education in

the community, and working as members of health teams and with other disciplines and agencies.

The three months of the intern's programme is spent both in the base hospital and in the villages. While in CHAD base hospital (for four or five weeks) the students spend time conducting out-patient clinics, on casualty duty, in the operating theatre (where they perform simple surgical procedures under the supervision of a senior doctor), in the labour room (where they monitor patients in labour, assist in deliveries, and are involved in post-natal care and health education), in the clinical laboratory (where they become familiar with simple laboratory tests), and on the wards (where they are responsible for in-patient care and health education).

In regular visits to the villages, the students form part of the leprosy and mobile clinic teams that supervise the work of the part-time community health workers, health aides and nurses. The students also give talks on health education to community gatherings, conduct maternal and child health clinics, and treat common conditions making referrals where necessary.

The students also spend time working in primary health care with government staff (in Anaicut block) and in an urban environment working with the government municipal clinics and with various CMC urban services. They are also posted for two weeks to K.V. Kuppam block, where they are exposed to the RUHSA programme which gives emphasis to animal husbandry, agriculture and socioeconomic work.

Each student also works on a number of projects. These include studies on the organizational aspects of development programmes, the management of common conditions in small hospitals, community health and management, and clinico-social cases, as well as major epidemiological studies. These studies are presented to the staff at regularly conducted meetings.

The students also do short evaluation studies of programmes conducted by the department of community health, and attend the monthly meetings where reviews of all the ongoing programmes are carried out through routine monitoring and surveillance systems.

At the end of the three months posting, each intern submits records of all work carried out concerning projects, health education, case studies, operations performed, and laboratory procedures, as well as details of any one development programme, the surveillance and monitoring system of CHAD and critical reviews of CHAD programmes.

Concurrence With ROME Targets

The Reorientation of Medical Education (ROME) strategy envisages, among its targets, the use of various learning methods. In the CHAD programme, as in CMC as a whole, learning methods which are community-based, problem-oriented, self-directed and self-evaluated receive emphasis.

Within the CHAD programme, the extent of community-oriented learning is evident from the above description of the various phases of training, in which students live and work primarily within communities during the block postings. In all phases students are exposed only to real life situations in the community which are relevant to the local health needs. The importance which CMC gives to community orientation can be seen from the fact that about 12 per cent of the whole medical training a student receives is community-based.

Problem-solving based learning receives emphasis particularly in COP and CHP-II, when the students are given problems to work on, such as the extent and cause of anaemia or filariasis in the community. As well, CMC as a whole places emphasis on problem-based learning (PBL) and incorporates two workshops (each of one week) on PBL in its curriculum for medical students. Task-related learning is a feature of all phases of CHAD training.

Self-initiated and student-directed learning is prominent in CHAD training. Although supervision and guidance by staff is initially quite intensive (with one senior staff member supervising 15 students), the amount of supervision is reduced in each phase as the students become more confident. Finally, in the third phase, learning is self-initiated and the students, for instance, formulate their own learning objectives and plans. In the fourth phase the learning is entirely self-directed. Traditionally, self-directed learning involves finding answers from such things as books and computers, but with the CHAD programme answers are found in the communities, through interviews and observations made on such things as life-style and environment. There are also simulation games during COP. As well, the students have small group discussions on what they have observed, in which they share their experiences and learn from each other, and are guided by staff in clarifying their observations of case studies.

Self-evaluation by students is also a feature of CHAD training. During the four phases of training students are required to make presentations of their work, for which they make evaluations of their studies, at first under the guidance of staff. As well, during the training, the students evaluate national programmes and the CHAD programme. Ultimately, during the interns training, the students evaluate their own skills and those of their peers.

Apart from the emphasis on learning methods, the ROME strategy envisages the facilitation of team-work skills in future doctors. In CHAD training, learning activities involving teams of students from different professions (such as physiotherapy, occupational therapy, nutrition and biostatistics) are prominent in all phases, so that the students learn to look at problems as a whole from different points of view. As well, the students gain experience of teamwork when working with the mobile health teams in phase 4.

Other targets of the ROME strategy include the introduction of learning activities that help students to understand the social and environmental causes and effects of diseases in a community. In the curriculum developed for the CHAD programme, behavioural sciences (including psychology, sociology and cultural anthropology) have been included, so that the students learn to understand that the behaviour of individuals and communities influences the occurrence of disease.

The CHAD training programme therefore largely coincides with ROME targets.

Impact of CHAD

The impact of the CHAD programme cannot be seen in isolation from that of CMC as a whole. The programme should be considered in the light of it being a product of the Community Health Department of CMC, supporting and implementing CMC strategies. With this in mind, the impact of the CHAD programme can be seen at institutional, community and national levels.

At institutional level one of the most obvious impacts of the CHAD programme concerns the focus on interdisciplinary approaches to problems, and the involvement of other disciplines in the block postings. Another influence of the programme at this level concerns the development of attitudes by students, who build up positive attitudes towards working in rural areas and towards the needs of rehabilitating patients psychologically, socially, physically and occupationally. Another impact of CHAD training is that it allows a lot of opportunity for skill development in hospital and rural settings, including managerial, behavioural and epidemiological skills.

Perhaps the greatest impact of the CHAD programme is to be seen at community level. One impact at this level is evident in the medical services provided by CHAD. As has been noted above, CHAD operates through a network of health teams which cover the entire development block of Kaniyambadi, and as well the CHAD base hospital provides many services to the people of the block. There is a good referral system from the periphery to both the CMC and CHAD hospitals. As well as the health services provided by CHAD, the faculty is

also largely involved with raising the status of women in Kaniyambadi block through the various social and economic development programmes.

Impacts of CHAD on community health are evident in the health statistics for Kaniyambadi block. Between 1980 and 1990 the estimated population of Kaniyambadi block rose from 73 334 to 90 750, and the impact of CHAD was particularly evident in the field of family planning and maternal and child health.

During the period 1980 to 1990 the number of family planning acceptors among eligible couples rose from 20 per cent to 41 per cent, and the crude birth rate dropped from 26.6 to 22.8. At the same time, a trend towards increasing birth intervals was evident. Birth intervals of less than or greater than 24 months have decreased or increased, respectively, by 18 per cent over the decade.

Regarding antenatal care, statistics over the ten year period show that more and more mothers are taking up antenatal care services. In 1990, 95 per cent of mothers received antenatal care as opposed to 49 per cent in 1980. As time proceeds the statistics show that mothers are availing themselves more and more of the services provided (such as making more visits, and registering at earlier gestational ages).

Other statistics indicate that more babies are being born in hospital (47 per cent in 1990 as opposed to 25 per cent in 1980) and, of those births taking place at home, more are attended by trained personnel (94 per cent in 1990 as opposed to 40 per cent in 1980).

With respect to birth weight, statistics show this to be increasing. Over the decade, the number of babies born at weights between 2.0 and 2.5 Kg decreased (from 34 per cent to 21 per cent), whereas babies born at weights over 2.5 Kg have increased (from 59 per cent in 1980 to 73 per cent in 1990).

Other indicators of advances made by CHAD in the field of MCH in Kaniyambadi block are to be seen in the facts that, between 1980 and 1990, the infant mortality rate dropped from 100 per 1000 to 51 per 1000 and the number of babies being branded to ward off disease dropped from 30 per cent to 5 per cent. During this period also, the immunization rate with three doses of DPT (diphtheria, pertussis and tetanus) and OPV (oral polio vaccine) rose from 36 per cent to 93 per cent. The pattern of distribution of living children has also changed over the ten years, and whereas in 1980 the majority (48 per cent) of families had more than four children, in 1990 only eight per cent of families had four or more children, with the majority having one and two children (37 per cent and 33 per cent respectively).

Apart from maternal and child health, CHAD is also making inroads into the diseases and afflictions its programmes cover. For instance, in 1982/3 the prevalence of rheumatic fever and rheumatic heart disease was as high as five per 1000, but today it is less than two per 1000 in Kaniyambadi block. With regard to malnutrition, limited data from two villages indicate that in 1990 more people were of normal weight and slightly less people were suffering from malnutrition of all stages.

Another impact of CHAD at community level concerns the practice location of trained medical personnel. CHAD students develop a sensitivity to underprivileged and handicapped people and graduates are so often fired with enthusiasm by their exposure to community health that, when they complete their training, they set out to apply the CHAD experience. Most CMC graduates go on to missions, mission hospitals, or development programmes elsewhere, where they complete their two bonded years. Thirty per cent of graduates continue to work in mission hospitals after their two obligatory years, some for 15 years or more (although most only complete one additional year). Other ex-CMC students go into government primary health services to implement something of the CHAD experience within the public sector.

CHAD has also had an impact at national level. The Dr M.G.R. Medical University of Tamil Nadu has recommended, on the basis of the CMC experience, that block postings be introduced in all its medical schools (of which there are thirteen in the state of Tamil Nadu). The University has also recommended that students should go into the field in their first year and that the medical schools should teach behavioural sciences, statistics and health economics. In comparison with graduates from other schools in the country, one characteristic of CMC graduates is their honesty with regard to health situations. This characteristic is no doubt due to the nature of the whole medical college of which CHAD is a part.

Problems Encountered By CHAD

Problems Encountered Before Implementation of the CHAD Programme

The Family Health Advisory Service (FHAS), which was implemented by the Community Health Department in 1957 in response to the government recommendation that every college should have a field practice area, was ultimately replaced with the CHAD programme because of various limitations. As FHAS was the forerunner of CHAD, it may be pertinent to mention what these limitations were.

In FHAS each student was given responsibility for two families, one with a chronic disease and one with an acute problem, each of which was visited by the student every one or two weeks. It was this arrangement, as opposed to the block posting arrangement, that caused most of the problems with this programme.

One problem concerned the fact that the students only visited the families at inconvenient times of day. Because the students were not living in the villages, they visited the families, who were predominantly rural and therefore agricultural, only in the afternoons. At this time of day most agricultural workers are usually either working or resting. Hence, because it was not a good time to visit agricultural workers, the community gradually became less responsive to the students.

Another problem concerned the fact that contact with the families was too broken up, as the students visited the villages only on one afternoon each week, and were not motivated to stay on until later in the day. In this respect the block posting is advantageous, as the students are not trying to concentrate on other subjects at the same time or worrying about returning to the university campus in the evenings, and are therefore able to give their full attention to the community. With the block posting system the students spend a lot more time in the community, either living there during the posting or else spending about 14 hours each day there.

Another limitation concerned the fact that the families used by the students were selected from only about five villages. This meant that there was an almost continual flow of students to each village, so that the families began to feel that they were being used as guinea pigs. This resulted in a negative reaction to the programme.

Problems Encountered During Implementation of the CHAD Programme

Difficulties encountered during implementation of the CHAD programme mainly relate to the imposition of the block postings. Block postings involve more of students' time than had previously been allocated for community health, and entail a break in the teaching of all other subjects. When the programme was implemented therefore, other departments had to sacrifice some of their teaching time, and this resulted in opposition from those departments.

Initially the objections of other departments were partially overcome through an authoritarian approach, and they were asked by the principal to accommodate

the block postings for one or two years until the value of the system could be ascertained. Even after this time, although the effectiveness of the block postings was appreciated, there was still opposition from other departments.

Another way in which opposition was appeased was by involving other departments in the community-based training programmes. During block postings the students undertake a number of studies in which other departments are necessarily involved. For example, a study on anaemia during the COP programme involves staff from physiology, biochemistry, haematology, and clinical pathology, as well as clinicians. Staff from the other departments visit the village on particular days only.

Other problems with the block postings, encountered during implementation, concerned the other duties (such as hospital duties) of CHAD staff. During the block postings, where most of the teaching by CHAD staff is concentrated, CHAD teaching staff are unable to attend to their other duties. This created problems during the initial stages of implementation.

Problems Encountered After Implementation of the CHAD Programme

The gender bias

CHAD has concentrated many of its developmental efforts on women, but has barely touched on the development of communities as a whole. Men may benefit as individuals from agriculture or animal husbandry schemes, but apart from the occasional youth club and the CODES motor vehicle repair training scheme, most of the community development activities focus on women. This has resulted in opposition from some men, who have the same problems of employment as women and do not like the non-traditional (in India) surrender of power to women.

The rural area bias

CMC has always had a limited urban programme for training community health nurses. Medical students in their final year block placement are encouraged to investigate urban problems and plan programmes for dealing with them. However, CHAD has not yet worked out a model for community health and development that will work in urban environments, although a CHAD programme is in its infancy in Vellore town.

An urban programme needs developing not only because of the desperate need but because of the importance of introducing medical students to the realities of a rapidly expanding environment that is no more familiar to them and is far more threatening than the village environment. Poverty in towns is characterized by a battle for survival in conditions of squalor and degradation, whereas poverty in villages is rarely without a certain dignity and sense of community. The majority of students end up practising in urban areas, and they should not be ignorant of how urban populations live.

The block bias

The health of communities in Kaniyambadi block has greatly improved. Education and accessibility have resulted in an extremely high take-up of health services, to a degree not typical of India as a whole, and there is concern that students introduced to the village situation here may imagine it to be typical. Therefore CHAD is now involved in other areas, and has embarked on a limited outreach programme in the Jawadhi Hills, an isolated and inaccessible tribal area to the south of Kaniyambadi. This region, in which anaemia and malnutrition abound, is a desperately needy area, requiring basic socioeconomic and agricultural development even more than health care.

The saturation factor

There are about 60 villages involved in the block postings, and a ten year cycle ensures that a particular village is visited only once during this time. From the statistics which are kept, the changes over the ten years can be analysed to see the impact of continuous service by CHAD. Improvements in indicators such as infant mortality were dramatic in the early years of the programme but have now been static for several years, and from experience gained in other places it appears that CHAD may be near the limits of improving health by medical interventions. For instance, CHAD has identified low birth weight as one of the high risk factors that needs to be tackled, for which it can provide medical care, but the root cause of such a problem can really only be tackled through a variety of socioeconomic measures that require action from the community rather than CHAD.

However, changes occur in the medical picture of any community, and no community will ever be without disease problems. In Kaniyambadi block, although an impact has been made on infant mortality, other problems have sprung up as priorities. For example, there is now an increase in suicide, while malnutrition, diarrhoea and tuberculosis remain problematic.

Block postings

A problem that has emerged with the block posting system concerns the waning of the effect on the students. Measurements of attitude to village life and PHC before and after block postings has shown that the effect wanes after the first posting and is much reduced by the second posting. The effect rises again after the third posting. This is a weakness of the block posting system. Although the block posting arrangement helps students to concentrate on community medicine, it does have a tendency to make them compartmentalize the subject. Block posting teaching therefore needs reinforcing, for instance through teachers in other departments stressing social or environmental aspects in order to provide continuity. All faculty members need to be sensitive to socioeconomic issues.

A final problem with the block posting arrangement is the need for advanced detailed planning. Every necessity must be catered for and be available in the village from the commencement of the programme. Pressure of work in the school and community sometimes limits the time for such careful planning.

Discussion and Conclusions

The CHAD training programme highlights two important aspects of ROME: team-work and intersectoral action. Team-work is important because physicians need to work with other members of the health team and therefore need to be aware of the skills and roles of other members of the team. The CHAD teaching programme emphasizes interdisciplinary teaching, and students interact with other members of the health team during their undergraduate training. An intersectoral approach is evident in CHAD training when students are exposed to other development activities such as agriculture, animal husbandry, adult education and income generating programmes. This exposure helps the students to understand the role of the physician in a broader context, as well as how the physician can interact with other sectors to improve the health of a community.

As well as team-work and intersectoral action, the CHAD training programme also exposes students to research methodology (during the third block posting), when they carry out studies on priority health problems (which have been identified either by the community or by the staff, based on information gathered from the community). The information gathered by the students helps to assess some of the programmes organized by the department, and hence helps the department to reorganize health services as necessary and to prioritize research topics.

A significant feature of the CHAD training programme is the block posting arrangement. Although the block posting system has its disadvantages, CHAD experience indicates that this arrangement is far more satisfactory than integrating the teaching of community health into the normal medical school teaching timetable.

The main advantage of the block posting system is that students spend a lot more time with the community. They are able to focus their attention on the community and its problems without interference from the activities of other teaching programmes. The arrangement allows students to visit families at times convenient to the family rather than at times convenient to the students, so avoiding the development of negative reactions by the community (as occurred with the Family Health Advisory Service – the precursor of CHAD).

One disadvantage of the block posting arrangement is that it necessitates a break in other teaching programmes. Another difficulty is that staff involved in a block posting are unable to contend with other duties for the duration of the posting. A further problem relates to the fact that block postings require meticulous organization in advance so as to ensure that everything that may be needed during the posting is readily available. However, perhaps the major weakness of the block posting arrangement is that, because the postings may be separated by one or more years, the positive attitudes towards community health, which are evident in students immediately after such a posting, wane. There is therefore a need for reinforcement of block posting teaching, for instance through the stressing of socioeconomic issues by teachers in other departments.

During implementation of the CHAD programme, opposition to the block posting system arose because of encroachment on the teaching time of other departments. This opposition was countered by involving other departments in the community-based training programmes, as many community-based studies are best carried out through a multidisciplinary approach so that students learn to see problems as a whole.

As far as effects of the CHAD programme on the community are concerned, positive effects include the improvement in many health indicators (such as infant mortality) in Kaniyambadi block. Although it appears that the CHAD programme may be near the limits of improving health by medical intervention, experience shows that other health problems emerge as earlier ones are redressed. Another positive effect of the CHAD programme is the high take-up of health services by the community in Kaniyambadi block, to an extent not typical of India as a whole. Negative effects of the CHAD programme on the community include the generation of opposition from some men in the community, which

has resulted from the fact that CHAD directs the majority of its developmental efforts towards women. CHAD experience therefore indicates that programmes should endeavour to develop communities as a whole. A negative effect of the forerunner of CHAD (the Family Health Advisory Service) was that, because the field area was not large enough, the communities were visited too often by students, with the result that the villagers began to feel they were being used as guinea pigs. Nowadays the CHAD programme covers a field area large enough to ensure that the same community is not visited too often.

With regard to the problem of maldistribution of medical personnel, the CHAD programme helps students to develop sensitivity to underprivileged and handicapped people. Most CMC graduates work in missions, mission hospitals or development programmes for their two obligatory years, and some 30 per cent of graduates continue to work in mission hospitals for longer. This is not an insignificant achievement.

One aspect of the CHAD model that needs to be borne in mind is that it is a programme for rural areas only, and, although it is a successful model for community health and development in rural areas, it is not a model that will work in towns. As the majority of medical graduates ultimately work in urban environments there is a need for urban community health training programmes.

Thus the strong points, according to ROME, of the CHAD model of medical education include its community-orientation and concern with human values, as well as its problem-orientation and emphasis on behavioural sciences. Although the block postings are primarily organized by the Community Health Department, staff from other disciplines participate in the teaching whenever and wherever relevant, and the model can therefore be considered to be integrated. The programme should, however, be seen as part of the greater and more traditional curriculum of CMC, which is organized around disciplines but utilizes PBL to an extent. The CHAD model is both patient-centred (community-oriented and concerned with human values) and student-centred (problem-oriented and integrated).

6

Postgraduate Institute of Medicine, Sri Lanka; Introducing Relevance to Medical Specialization

Introduction

SEVERAL systems of medicine, including the Western system, are recognized in Sri Lanka; and the whole island is well covered, down to the grassroots level, by health services and practitioners in the various systems.

The predominant traditional system of medicine is the Ayurvedic system, and there are large numbers of trained and untrained doctors in this system on the island, who work as either government or private practitioners. Most Ayurvedic practitioners display confidence in Western medicine. Homeopathy is also recognized as a discipline in Sri Lanka, but there is no organized training programme (as there is in India). Unqualified practitioners of medicine are also practising in the country.

The Western system of medicine has, however, become more and more established. There are about 3000 government doctors and about 700 private practitioners qualified in Western medicine in Sri Lanka, and, of these, over 70 to 80 per cent practice on their own, there being very few group practices. Most practitioners of Western medicine become specialized in such disciplines as surgery, paediatrics, general medicine, obstetrics and gynaecology or psychiatry. In 1988, a questionnaire showed that most practitioners in the Western system were grouped around the cities, close to the big hospitals, and did not extend to grassroots level.

Health services at the grassroots level include government hospitals and ayurvedic health care. Overall, therefore, coverage of the island by health care services is good, and the whole population lives within easy reach of some form of service and qualified treatment.

Medical education in the Western system first began in Sri Lanka in 1870, with the establishment of Ceylon Medical College. This college acquired university status in 1942 and was incorporated into the University of Ceylon (ultimately the University of Colombo) as its Faculty of Medicine. Subsequently, the rapid increase in population created a need for more doctors and in 1962 a medical school was set up in the Peradeniya campus of the University of Ceylon (ultimately the University of Peradeniya). Then, in 1979, the Faculty of Medicine, Jaffna University, was opened, and the medical faculty of the University College of Ruhuna, which was affiliated to the University of Colombo, was established (ultimately becoming the Faculty of Medicine, University of Ruhuna, in 1983). In 1981, the College of General Practitioners set up a private medical college known as the North Colombo Medical College. This was recognized by the University Grants Commission and affiliated to the University of Colombo (and was later taken over by the government).

Undergraduate medical education, therefore, has now been in existence in Sri Lanka for well over a hundred years. Postgraduate education, however, is a much newer institution in the country. Between the late nineteenth century and 1980, most graduates from medical schools in Sri Lanka went to the UK for postgraduate studies to obtain diplomas of the Royal Colleges, which were the only clinical diplomas recognized by the Department of Health in Sri Lanka for specialist appointments. In 1948, the Royal College of Surgeons of England began to hold their primary FRCS examinations in Colombo, and later the Royal College of Physicians and the Royal College of Obstetricians and Gynaecologists began to hold MRCP Part I and MRCOG Part I examinations in Sri Lanka. It was on the results of these exami- nations that doctors were sent abroad on unpaid leave to complete part II of the respective examinations. The end result of this arrangement was that many of the doctors sent by the department failed to return, having obtained more lucrative appointments in the UK or other countries. And although in 1967 the medical faculty of Colombo University began to grant postgraduate degrees and diplomas, they were not recognized by the Department of Health as qualifications for appointments to senior specialist posts. The Department still insisted on the diplomas of the Royal Colleges in the UK as the sole criteria for specialist appointments.

In the 1970s the exodus of doctors from the country became severe, for various reasons, including political disquiet in the country, poor salaries for government doctors, the banning of private consultation practice for government doctors, and the material benefits offered by rich countries. For example, between 1972 and 1980, twenty medical officers went abroad to obtain radiology qualifications but only one returned; and whereas there were 22 radiologists in government

service in 1972, there were only eight in 1980. As well, there was almost a complete loss of psychiatrists, who left as soon as they reached the level of seniority and competence which allowed them to obtain positions in other countries.

To contain the brain drain, the government introduced a Compulsory Service Act, which required each doctor to serve six years in government service before going abroad. However, because of opposition and frustration to this act among doctors, it was repealed in 1977.

It was not until 1979 that the holding of foreign examinations in Sri Lanka was banned. This was several years after the Institute of Postgraduate Medicine (IPGM) had been established (1974) and formally inaugurated (1976). For several years the IPGM had failed to commence training programmes for postgraduate degrees, except in community medicine, because foreign examinations of the UK Royal Colleges were still being conducted in Colombo. Foreign examinations were preferred by doctors for various reasons including the fact that leave was still granted to people wishing to obtain higher qualifications abroad. The Government Medical Officers' Association (GMOA) gave lukewarm support to IPGM, and there was resistance from the medical fraternity for a variety of reasons. In 1979 the government decided to stop holding foreign examinations and not to recognize foreign diplomas/degrees for appointments in the ministries of health and the universities. There was a lot of opposition to this, but the government was unyielding. In 1979 IPGM was re-established as the Postgraduate Institute of Medicine (PGIM), and postgraduate training began in 1980. Since the beginning of 1980, doctors have required certification from PGIM in order to enter government practice (but not private practice).

In Sri Lanka, therefore, a system of postgraduate medical education was devised that took into account the unique socio-political and professional conditions prevailing in the country. This system has now received uniform support from all concerned quarters and it is mainly for this reason that the establishment of PGIM and its subsequent development have been considered innovative.

Implementation

Structure and Functioning of PGIM

PGIM has the required powers to admit, train, and examine students and to make recommendations concerning the award of degrees, diplomas, certificates and other academic distinctions in different specialities. The central responsibilities of PGIM are to provide a forum for the meeting of boards and other professional

bodies, such as colleges, which are contributing to postgraduate education within the Institute's training programmes.

PGIM is affiliated to the University of Colombo (UOC). It has independence of finance since it receives a budget from the University Grants Commission (UGC), but comes under the university senate for academic matters. It is run with an independent board of management that is responsible to the vice-chancellor and to the council of UOC.

PGIM consists of a Director, a Board of Management and various Boards of Study. The Board of Management consists of representatives of the ministries of Higher Education, Health and Finance together with officials of the health department, representatives of the five universities and nominees of the UGC. The boards of study serve the academic aspects of the institute, and consist of representatives of the universities and colleges or associations in the various disciplines. The primary function of the boards of study is to recommend goals and standards of training in the different disciplines, to formulate and approve training programmes and to accredit completion of training by the award of appropriate certificates. Boards of study meet at least once a month.

Lecturers and course directors come from all over the island. Very little is provided in the way of incentives for staff and lecturers connected with PGIM. Travel expenses are paid, with a nominal amount for subsistence, so that services provided are primarily voluntary. Hospitals which are attached to the PGIM for training include the General Hospital and other associated hospitals in Colombo and other hospitals under the other universities. There is a PGIM representative in each centre at which training takes place, who supervises training programmes and obtains feedback from trainers and trainees to discuss with PGIM and its boards.

Facilities

PGIM began its existence in a room in the Faculty of Medicine, University of Colombo, with a staff of two (one secretary and one assistant registrar). Afterwards, for two years, it occupied a building in the General Hospital premises. Finally, a building opposite the General Hospital was donated to PGIM, which it occupied in 1982. However, owing to expansion of activities, this building is no longer sufficient.

At present, the PGIM Library is situated in the General Hospital premises, Colombo, and provides normal library facilities for PGIM trainees and teachers as well as reading facilities for members of the medical profession. In 1988, the main library contained 8000 books and was receiving 400 journals regularly. A branch library exists at the Peradeniya teaching hospital for PGIM trainees in

Kandy and Peradeniya. Some journals are also supplied to the teaching hospital in Jaffna. Branch libraries are to be established in Galle and Jaffna.

Pattern of Training

Training programmes of PGIM lead to the award of MD, MS or MSc degrees or diplomas. Following the award of a degree, a postgraduate must work for a further two years in the relevant discipline before he/she becomes board certified and hence eligible for appointment to a specialist post in the Department of Health Services.

Between three and eight months after completion of the intern year a postgraduate may sit for Part I MD or MS. This consists of written papers in multiple choice question and essay form. A postgraduate who passes then spends 18 to 30 months in an approved centre for clinical training and afterwards sits for Part II exams. These examinations include clinical, oral and written sections, as well as items of Sri Lankan relevance. After passing Part II exams and being awarded MD or MS, the postgraduate spends one year overseas and another year in Sri Lanka in clinical training, during which time he/she submits a dissertation on a subject relevant to Sri Lanka which he/she has studied in some depth. The trainee then works for one more year as assistant physician or surgeon before being recognized as a specialist and certified as a consultant.

Programmes at PGIM

In 1993, PGIM is conducting MD training courses in anaesthesiology, community medicine, family medicine, medicine, forensic medicine, microbiology, paediatrics, pathology, psychiatry, radiology, and radiotherapy and oncology; MS training courses in dental surgery, obstetrics and gynaecology, ophthalmology, otolaryngology, orthodontics and surgery; MSc courses in community medicine, community dentistry, and health education; and diploma courses in family medicine, general dental practice, legal medicine, tuberculosis and chest diseases, microbiology, ophthalmology, child health and pathology. At present, cancer surgery, plastic surgery, paediatric surgery, and genitourinary surgery constitute sub-specialities.

The development of finer specialities has been discussed and provisions have been made for trainees to specialize in cardiology, cardiothoracic surgery, dermatology, neurology, respiratory medicine and rheumatology and rehabilitation. Recommendations have been made to establish the finer specialities of nephrology, endocrinology, gastroenterology and geriatrics, as the country needs specialists in these areas. A Masters Degree in health administration is also being established.

Orientation of Training Programmes

Future projections of manpower requirements for the public sector are worked out by the Ministry of Health, currently to the year 2010. The Ministry of Health conveys this information to PGIM. PGIM does not yet run training programmes for all the specialities required by the Ministry of Health, such as geriatrics, nephrology and endocrinology.

Altogether about 1000 specialists are required in the clinical field by 1995. At present there are 324 specialists in the country, 32 being on contract and most being retired/reemployed. There are also 338 trainees following PGIM courses. There is therefore an acute shortage of specialists in the country, especially in ENT, surgery, general surgery, and cardiothoracic surgery. Specialists are also needed in other fields, but the need is not quite so great.

Admission of Students

For some disciplines (anaesthesiology, dental surgery, medicine, obstetrics and gynaecology, ophthalmology, otolaryngology, paediatrics and surgery) a pass in the relevant Part I examination is required for admission to in-service training leading to the degree of MD/MS. Selections to the other disciplines are made after an interview by a selection committee appointed by the appropriate board of study.

A factor of relevance to admission of students is the ability of the employing ministry to release eligible candidates for the whole period of training. This latter factor can become a controlling factor, as, for instance, in 1988, when the Ministry of Health and the Ministry of Teaching Hospitals decided not to release doctors to follow postgraduate training programmes at the PGIM until such time as new interns had been appointed, which in turn depended on the functioning of medical faculties and the return of the university education system to normal.

International Cooperation

PGIM initially received multilateral assistance from WHO. The main areas of support by WHO included the recruitment of external examiners, the provision of regional fellowships for trainees in community medicine, the procurement of supplies and equipment required for postgraduate teaching and training, and the strengthening of postgraduate tutorials and workshops. WHO also supported a teacher of radiology for two years. Most WHO assistance was, however, phased out after five or six years, and now occurs only in relation to community medicine activities and external examiners.

Apart from multilateral sponsorship, other funds for PGIM have come from bilateral agencies and from the university. Funds from ODA and the Netherlands helped initially with the Library, as did funds from WHO. Bilateral funds are used for sponsoring foreign examiners, which activity is considered to be important because it gives PGIM a stamp of international recognition. International approval is also evident from the fact that, because of the high standards of PGIM, graduates are able to take examinations in the UK and some other countries without further training.

The most expensive part of the PGIM training programme is the one year of training abroad. There are several scholarship schemes available to postgraduates for training abroad, including PGIM scholarships. WHO provides fellowships (four per year) for training in community medicine. Also there is the Overseas Doctors Training Scheme under which PGIM sponsors trainees and the Royal Colleges in UK secure placements for them, with paid jobs, for a period of two years. This latter is a double sponsorship programme, with the initial expenses of trainees being met by a loan scheme of PGIM (using funds provided by the ministries of Higher Education and Teaching Hospitals). Trainees can also benefit from the Medical Awards Scheme of the Association of Commonwealth Universities.

Impact

PGIM has now been functioning for just over a decade, and it may therefore be too early to see much of an impact. So far there is little documented evidence of an impact of PGIM on the country's spectrum of health and disease. However, a slight impact is noticeable with regard to manpower, as is evident from tables 1 and 2. Although there still exists a dearth of specialists, particularly in certain specialities, trends indicate that Sri Lanka will be able to rectify this matter in the next decade or so if the current policies and practices are sustained.

One reason for the apparently small impact so far is that, although there are increasing numbers of locally trained specialists in the country, it takes a minimum of five years to produce board certified specialists. PGIM began to function properly only in 1980, and therefore the earliest date at which an impact of PGIM on manpower would be evident is 1986. No pre-1986 figures are available from the Ministry of Health, but the total number of specialists in the country was significantly increased in 1987 as compared to 1986 (Table 1), and the number of specialists employed in particular disciplines has since been increasing gradually (Table 2).

Table 1. *Output from PGIM (actual numbers), in all disciplines, 1980-1990, as compared to the number of specialists (in all disciplines) in the country*

Year	Board certified specialists	Postgraduates (MD, MD, MSc)		Diploma holders	Total number of specialists in Sri Lanka[b]
		Part II	Part I		
1980	5	13	16	0	...
1981	5	18	35	0	...
1982	8	23	47	15	...
1983	21	45	64	10	...
1984	12	44	45	26	...
1985	17	51	61	18	...
1986	22	37	92	34	379
1987	14	56	73	34	484
1988	14	62	75	65	498
1989	...	80	67	42	483
1990	...	78	76	101	415[c]
1991	–	[a]	–	–	–

[a]84 trainees waiting to train abroad. [b]Source: Annual Health Bulletin of Sri Lanka, published by the Ministry of Health. [c]Excluding Northern Province.
... = data not available.

Table 2. *Number of specialists produced by PGIM compared to the number employed in the country*

Speciality	Total number of graduates (1980-89)				Total numbers of specialists employed[a]	
	Diploma	Part I	Part II	Board certificate	1986	1989
Obstetrics and Gynaecology	–	81	69	16	54	71
Psychiatry	–	29	25	9	17	28
Paediatrics	–	34	36	14	31	45
Anaesthesiology	–	47	37	8	35	45
Pathology	32	2	19	3	12	16
Radiology	–	32	21	9	11	14

[a]Source: Annual Health Bulletin of Sri Lanka, published by the Ministry of Health.

The first training programme under the Institute's auspices, which commenced while there was still a lot of resistance to the Institute, was in community medicine.

In the eleven years that this training programme has been in operation, a total of 56 MDs and 23 MScs has been produced. One reason for the slow production of community medicine specialists is that, of the five medical schools, each has only one or two places for research, and the MD degree is by thesis. With such small numbers of specialists, an impact on disease profiles or manpower requirements cannot as yet be expected. However, an impact of the programme on the attitudes and awareness of doctors towards community medicine is noticeable, and the discipline is now not only thriving but has achieved a higher status.

Community medicine specialists have the potential for making an impact in rural areas because they do not practice as consultants. In general, however, the impact of the MD and the consultant in rural areas is nil because trainees usually remain attached to big hospitals (and are consequently ignorant of the situation at the periphery), and there is no referral from peripheral hospital to main hospital or from GP to consultant (doctors in Sri Lanka generally do not refer patients because this means they lose the patients). Because community medicine specialists do not practice as consultants, they will increasingly have an impact in rural areas on, for instance, poverty, malnutrition, and lack of water supplies and disposal facilities.

Overall, therefore, the impact of PGIM is becoming more and more evident. Salaries are now improved and the Ministry of Health is employing people with MD and MSc degrees. The demand for postgraduate education is increasing every year, and has increased since 1988 because of the salary increases granted to medical officers of the ministries of Health and Teaching Hospitals. An impact on general health care services will gradually become apparent.

Problems Encountered By PGIM

Physical Infrastructure

Lack of space has been a constraint to PGIM and the need for development of physical infrastructure is now urgent. Because of expansion of activities, the present PGIM building is not sufficient and allocation of rooms for classes is a serious problem. Almost all the boards conduct classes at least once a week, and in addition there are daily classes for full time courses such as community medicine and health education. As well, the lack of space in the present main library means that most of the facilities of a modern university library are not available.

Three old buildings have been renovated to house the examinations branch, clinical examination halls and medical illustration unit (which caters to the requirements of PGIM training programmes, hospital needs and the private sector), but these buildings are only semi-permanent and more buildings, with considerably more floor space, are required.

Finances

Lack of money has been a major constraint to the development of PGIM, although all courses of study that have been planned are being conducted without any major problems.

The most expensive component of the PGIM training programme is the one year of training overseas, each person costing the government 500 000 rupees. This problem was partly solved by arranging to have tuition fees for the year overseas waived, on the basis that trainees are employed while undergoing training. As well, accommodation in hospitals is arranged for trainees during their overseas training.

Finances are also a problem as far as equipment is concerned. Some training courses (such as orthodontics, for which equipment is very expensive) do not yet exist because of the lack of equipment.

Opposition

Initially there was considerable opposition to PGIM, and for four years the PGIM failed to commence training programmes. This was because foreign examinations of the UK Royal Colleges were still being conducted in Colombo, which the doctors preferred, and because leave was still being granted for medical officers to study abroad for higher qualifications. The only programme to begin in these early years was that of community medicine, in which training abroad is not strictly relevant. The community medicine board decided not to recognize courses from other countries.

At first, the Government Medical Officers' Association (GMOA) gave little support to the concept of PGIM. There were many valid reasons for this early resistance, such as lack of facilities and libraries, which needed to be sorted out before the Institute could begin to function. Headway began to be made in 1979, when the government decided to stop holding foreign examinations and to stop recognizing foreign qualifications for appointments in the ministries and universities. There was a lot of opposition to this move, but the government was unyielding and it took four or five years for the situation to resolve.

There was also a certain amount of opposition to the first director of the Institute, who, although a very eminent scientist, had no previous contact with clinical teachers. The second director of the institute was a clinician, a distinguished neurosurgeon and a man who had held many high offices in Sri Lanka. As such, he had the confidence and respect of GMOA, and there soon developed a general acceptance of the need for postgraduate training programmes and a readiness to make them work. The second director made a number of compromises in order to overcome the opposition, such as agreeing to have overseas external examiners, incorporating the requirement for one year's overseas training, and making arrangements for PGIM graduates to take British exams without further training. This director was able to use his influence with physicians in order to get PGIM launched.

Variety of Training Programmes

In 1980 the ministries of Health and Teaching Hospitals estimated their requirements for specialist personnel up to the year 2010, and conveyed their requirements to PGIM. Certain requirements are in specialities for which there are as yet no training programmes under PGIM. For instance, by the year 1995, five geriatricians, six nephrologists, five gastroenterologists, five endocrinologists, six extra cardiologists, thirty-three extra dermatologists, nine extra neurologists, and seven extra rheumatologists are required, and none of these disciplines yet exists at PGIM.

However, courses for those disciplines which do not yet exist within PGIM have been discussed, and provision has been made for trainees to specialize in cardiology, cardiothoracic surgery, dermatology, neurology, respiratory medicine and rheumatology and rehabilitation. recommendations have also been made to establish the finer specialities of nephrology, endocrinology, gastroenterology and geriatrics, as the country also needs health care facilities in these areas.

But there are conflicts of opinion over the development of the finer specialities. If manpower requirements of the ministries of Health and Teaching Hospitals are the sole criteria for producing specialists, the training needs should be prioritized accordingly. This is a hindrance to the development of finer specialities because of the problems inherent in initiating and running a course solely to produce five specialists in a particular discipline, which may satisfy the country's requirements for some years. Lack of established units for some of these finer specialities such as nephrology, endocrinology and gastroenterology is another obstacle to providing postgraduate training in these areas.

Foreign Qualifications

The government policy that a specialist cannot practise in Sri Lanka without the Sri Lankan qualification has to a large extent stopped the brain drain. Specialists with foreign qualifications have been unable, since 1980, to be employed on a permanent basis in Sri Lanka, and can only work on contract, under which there are no terms for promotion. However, this policy is to some extent controversial because it prevents those doctors who have qualified abroad from returning to Sri Lanka to practise. Although this stipulation affects only a small number of people, it is a real problem.

Length of Time Taken to Produce Specialists

According to the projected of specialist manpower requirements for the ministries of Health and Teaching Hospitals, the country needs an extra 928 specialists in various specialities by 1995, which (according to the present intake and output) the PGIM will by no means be able to produce. One of the reasons for this inability is the length of time taken for the preparation of a specialist. If a doctor successfully completes all stages of postgraduate training under PGIM until he is board certified, it takes a minimum of five years for him/her to become a specialist; whereas in Thailand and Malaysia, for instance, the time taken for preparing a specialist after the first degree is three years.

PGIM Achievements

The Institute, formed by legislation and comprised of a Director, a Board of Management and Boards of Study, is, on the whole, running very effectively and successfully. There are no administrative problems, and very little in the way of change is required. Objectives are defined and programmes planned, and all courses of study that have been planned are running smoothly. As well, PGIM has been actively developing training programmes, incorporating new disciplines and formulating policies towards producing manpower in medical specialities.

The success of the Institute can be deemed from the fact that there is now a demand for PGIM training, particularly for certain courses. For instance, since the MSc course in community medicine started in 1989, 45 people have wanted to join although there have been places only for 15. Also, the new course in dental public health is popular, and 20 or so people sit the entrance exams each year although there are vacancies only for five.

Other achievements of PGIM include the development of some successful strategies. For instance, the strategy to help with training costs, whereby students

are employed while they are undergoing training abroad, was successful. Other strategies concern the provision of incentives. For instance, incentives for students include a refund of fees (2000 to 3000 rupees per term) if they are successful in the exams. Other incentives include the fact that graduates of PGIM, if they are board certified, can now take examinations in the UK and some other countries without further training. That the quality of training offered through the Institute is considered to be high and in keeping with international standards is another indication of the success of PGIM.

Discussion and Conclusions

In the ten years that PGIM has been in existence, the training schemes for consultants at specialist and diploma levels have taken off very well, and objectives of the Institute have largely been met. In most areas now there are reasonable numbers of specialists, except in some areas, such as anaesthesia, pathology, radiology, and surgery, which people do not like for various reasons (anaesthesia, for instance, is not popular because the earning capacity is less than in surgery). PGIM is considered to be a useful institution, and in a short time has produced more consultants and diplomats than the country would otherwise have had.

PGIM is a good model for other countries to adopt if they also have limited resources. The institute was formed by legislation, and employs no permanent staff. It is important to have as a director of such an institute someone who is senior and respected, and who has contacts. Personal contacts were important in the success of PGIM. In particular, the director of the Institute in its formative years, who was an eminent and respected person, had many personal contacts, and used his influence with physicians. Personal contacts were instrumental in getting the Institute accepted by the medical fraternity in Sri Lanka, as they were in getting foreign examiners to come to Sri Lanka, in getting placements abroad for the trainees, and in getting recognition of PGIM graduates abroad. Personal contacts were also important in obtaining equipment for the Institute.

If an established system of medical training is popular and is seen to be working, people are naturally resistant to change. The strategic use of compromising may help in overcoming opposition and in obtaining the collaboration of younger people. The director of PGIM in its earlier years made a number of compromises. For instance, agreements such as utilizing external examiners from outside the country, allowing trainees to complete one year of training abroad, and arranging for graduates to take foreign exams without further training, were all compromises which helped to overcome opposition.

The government policy that any doctor can work in Sri Lanka, but not as a consultant unless board certified by the boards of study, has prevented loss of personnel, but not completely. Some loss of graduates to other countries occurs following the completion of overseas training, when, since the host has become aware of the high quality training that a student receives in Sri Lankan institutes, trainees may be requested to stay on and work in the host country. However it seems that Sri Lanka, through the PGIM, will meet its requirements for highly qualified health manpower in the next few decades.

7
The Consortium of Health Sciences, Indonesia; Developing a National System of Medical Education

Introduction

THE development of medical education in Indonesia in the last two decades is the story of the Consortium of Health Sciences, as the Consortium has been responsible for systematization of medical education in the country. A brief look at the history of medical education in Indonesia will provide a background to the activities and achievements of the Consortium of Health Sciences (CHS).

The Dutch colonial years in Indonesia lasted from 1851 to 1942, and the Doktar Djawa School was opened in Jakarta in 1851. Initially the training course was for two years, but it was gradually extended until, by 1898 when the school was upgraded to become the School tot Opleiding van Indische Artsen, the course covered a period of nine years. In 1913 a second medical school was established in Surabaya, named Nederlandsch Indische Artsen School. In 1927 the school in Jakarta became a medical faculty, the Geneeskundige Hoge School, with a seven year course.

After the Dutch colonial years, the country was under Japanese occupation for three years (1942-45). During this period the two medical schools were combined to become the Ika Dai Gaku in Jakarta. This school was staffed by Indonesian professors and doctors, and the Dutch language was discarded. In order to satisfy the urgent need for more doctors the course was shortened to five years.

With the return of the Dutch after the war, the medical school in Jakarta was moved to Central Java, it's preclinical unit to Klaten and it's clinical unit to Surakata, becoming ultimately the Perguruan Tinggi Kedokteran Klaten and Surakarta (1946).

Schooling was interrupted many times because of fighting with the Dutch. In 1949, after sovereignty was regained, the school in Klaten, together with elements from the school in Surakarta, became the Fakultas Kedokteran Universitas Gajah Mada. The remaining constituents of the two original units were returned to Jakarta to become the Fakultas Kedokteran Universitas Indonesia (in 1950).

Between 1950 and 1965, nine medical faculties in various parts of Indonesia came into being, and there are now fourteen state medical faculties as well as ten private medical schools.

Around 1970 therefore, at the time the Consortium of Health Sciences was established, medical education in Indonesia was fairly disorganized and in need of fundamental reform.

Origin and Function of the Consortium of Health Sciences

The Consortium of Health Sciences is a body concerned with the development of higher education for health professionals in Indonesia. The Consortium began life as a Technical Advisory Committee to the Ministry of Education and Culture, from which it evolved over the years.

The Technical Advisory Committee was formed in 1962 by the Minister for Higher Education and Science, with the objective of advising the government on the development of tertiary education in various fields, one of which was medical education. Advice was given, for example, on the creation or development of medical schools, or on the development of a relevant curriculum. In the early years there were no proper mechanisms for follow-up, and the advice and recommendations of the committee went by unheeded by the Ministry of Education. After 1966 however, a Minister for Higher Education actively encouraged discussions on problems related to education, through seminars, workshops and conferences. Then, in 1969, the Ministry of Education and Culture, as one of a series of steps undertaken to decentralize technical decision-making, created the consortia system. One of the consortia created was the Consortium of Medical Sciences (CMS), which was officially formed in January 1970.

The function of CMS was to serve as an advisory body to the Ministry of Education and Culture in technical matters concerning medical education. In 1984, the functions of CMS were changed from the former 'medical' orientation to that of a broader 'health' orientation, and this was reflected by a change in name, to the Consortium of Health Sciences (CHS). Today therefore, the function of the Consortium is to serve as advisory body to the Ministry of Education and

Culture on technical matters concerning medical, dental, public health and nursing education.

The Consortium of Health Sciences functions in essentially the same way as did the CMS, through the CHS board, the CHS secretariat, working groups, and programme and project teams. Specific programmes are identified by the CHS through meetings (which are held at least once a year) of the deans of the faculties of medicine and through directives from the Director-General of Higher Education, Ministry of Education and Culture. Once a specific programme has been conceived, a project team is formed, headed by a programme manager, to develop and implement the project. Most programme managers, for reasons of operational feasibility, come from the Faculty of Medicine of the University of Indonesia in Jakarta. Members of the project team are technical persons from the various faculties of medicine.

Thus, the CHS performs its role by bringing together different groups concerned with specific issues for decision-making, and then following up the decisions at both institute and ministry levels. In this way the Consortium only plays the role of mediator and catalyst, and the sense of ownership of the decisions is on the implementers themselves rather than on the Consortium.

In 1987, some organizational changes took place within the Consortium. A 'peer group', consisting of senior academicians from the health professions, was instituted in an advisory capacity to the CHS and the Director-General of Higher Education, under the chairmanship of the former dean of the University of Indonesia, Faculty of Medicine. The Executive Secretary, now designated Secretary of the CHS, is a member of this group. In 1989, the CHS moved into new and more spacious accommodation (still within the University of Indonesia, Faculty of Medicine building), and the number of staff was diminished.

Accomplishments of CHS

Since it's formation, CMS/CHS has played a critical role in the development of medical education in Indonesia.

As one of its first tasks, in 1971, the Consortium carried out a survey of medical education to identify problems and suggest steps for solving them. The major problem at that time was the production of too many partially qualified physicians, in specialities which were not relevant to the country's health problems. The accelerated establishment of poorly planned new government and private medical faculties during the previous decade was thought to be responsible for this situation.

Subsequently, two events had a profound effect on the programmes of the Consortium. The first of these was the issuing of a health care policy by the Ministry of Health in 1974, which was aimed at providing more effective delivery of health care to the community. This policy required all medical graduates (except married women) to serve for three to five years (depending on location) in government service before entering private practice. This mostly meant that the graduates would serve in rural health centres (Puskesmas), where they would meet the primary health care needs of the local community and would function without the close proximity of supportive health care facilities. Previously, when this was not the policy, most new doctors had opted to work in relatively high-technology hospitals delivering (essentially) curative care. This policy therefore necessitated a substantial reorientation of the medical education programme in order to prepare medical graduates for their new roles.

The second event influencing the programmes of the Consortium was the medical education policy issued by the Ministry of Education and Culture in 1976, which included guidelines and a mandate for the Consortium to develop a national scheme for the reorientation of medical education in Indonesia towards community needs. Thirteen programmes were specified for action by the Consortium. These included: the development of a core curriculum; the development of National Teacher Training Centres; the development of a community medicine teaching model for each medical school; the commencement of postgraduate courses in basic medical and clinical sciences; and improvement of educational management, including educational planning. Also there was a programme to conduct National Board examinations for the certification of medical graduates from private schools (to improve the educational quality of private medical faculties), and a programme for institutional change in the existing medical faculties.

Activities of the Consortium in later years have gradually expanded to include those of nursing and paramedical education.

Community-Oriented Core Curriculum

A major accomplishment of CMS/CHS in the field of medical education (also in dental, public health and nursing education) was the development and implementation, on a national basis, of a competency-based community-oriented core curriculum.

In 1974, a nationwide system of rural health centres based on the concept of community medicine was created. The new health care policy issued in this year, which required medical graduates to serve for a number of years in

government service, mostly in rural health centres, necessitated basic changes in the undergraduate curriculum to make doctors effective in rural settings. In rural settings graduates need to have a predominantly promotive and preventive, community-oriented approach rather than a person-oriented, curative biased, hospital-centred approach. In remote posts, a new graduate may be responsible for as many as 60 000 people, and is also likely to have responsibility for administering personnel and resources in a number of additional clinics.

CHS (then CMS) was responsible for developing and implementing a new undergraduate curriculum that was directly relevant to the needs of the community, and work began on this in 1976. The strategy developed and used by CMS was based on two main assumptions. The first assumption was that the environment inside each medical school could be made responsive to change through personally involving medical school teachers in identifying problems and finding solutions to them. The second assumption was that a positive climate for change was more likely to occur if key individuals (deans of medicine, heads of departments and other senior staff) were involved in the project.

Initially, educational bureaux were established in all ten government medical schools and educational objectives were developed. Members of the bureaux were drawn from both preclinical and clinical departments and were selected on the basis of being interested in educational development. At least 50 per cent of bureau members were heads of departments. Each bureau first planned a workshop in educational science for a cross-section of teachers from all departments. In all, 494 medical faculty teaching staff from the 260 departments in the ten medical schools were participants in these initial workshops.

It was intended that the workshops would create an awareness of the need for change, develop skills in curriculum planning and implementation, and develop a critical mass of teachers who would transfer these skills to their colleagues. The development of specific instructional objectives was considered to be the key to relevant education.

Each of the ten medical schools was visited three or four times by a consultant or staff of the CMS in the two years following the initial workshop. During this period, further workshops in curriculum planning, for teachers who did not attend the original workshop, took place, as well as mini-workshops in effective methods of large-group and small-group teaching. Assistance was also given to major clinical departments (surgery, internal medicine, paediatrics, obstetrics and gynaecology, and public health) for the development of integrated curricula, and there was continuous consultative assistance for the construction of instructional objectives. Within a three year period, 74 per cent of the 260

departments had completed or nearly completed writing instructional objectives (as well as departmental objectives, which are not specific and are therefore not so meaningful in terms of curriculum change). Within this same period, 55 per cent of the 260 departments in the ten schools had completed or nearly completed the implementation of new teaching programmes based on specific objectives.

In this way the environment within the medical schools was made conducive to change. By 1980-81 the community-oriented core curriculum had been completed, and implementation began in late 1981. The core curriculum occupies 75 to 80 per cent of the credit hours required for completion of the MD degree. It is a competency-based curriculum defined in terms of specific behavioural objectives (cognitive, psychomotor and affective) that the students should achieve with respect to a series of specified topics in four main categories: medical, surgical, behavioural and community health. For each specific behavioural objective, the level of competence to be reached is specified, the recommended type of learning experience is indicated (such as lecture, group discussion, or practical work), and its linkages with the objectives of the primary and of related disciplines are identified. Defining the curriculum in terms of competencies rather than hours of instruction allows flexibility in its implementation. Twenty to twenty-five per cent of the curriculum is free for development by the individual institutions, so that each faculty can introduce objectives beyond the core to reflect its own priorities and capabilities. The core curriculum also provides guidelines for moving towards a more integrated educational programme.

Most schools of medicine began using the core curriculum documents in the early 1980s. In 1982 the CMS formed a National Teacher Training Project (NTTP) team to help medical schools identify the problems they were faced with in implementing the new curriculum, and to assist them in making appropriate adjustments to the existing curriculum. This team was to provide guidelines and suggestions for developing specific teaching and learning experiences, for student assessment and for programme evaluation, and at a later date would develop guidelines for field, clinical and laboratory learning experiences. A National Teacher Training Centre (NTTC) Network, linking the different medical schools spread across the country, was developed to facilitate this whole process at the school level.

Evaluation of the core curriculum was carried out in 1985 by CHS, to determine how it was being adjusted and implemented in each school as well as the general and specific issues being faced. This evaluation was intended to be more of an internal self evaluation for development purposes, and results are not available in one document. The evaluation involved the completion of a self-assessment questionnaire by each of the schools as well as visits by external

evaluators to selected schools. There was found to be wide variation in the extent to which the different schools, as well as the departments within them, had used the core curriculum and had adjusted it to suit their own goals and objectives. There was a lack of clarity, at least in some schools, in the concepts underlying the curriculum (for example, some schools understood 'community-orientation' to be synonymous with 'rural health service').

With the wide experience gained over the years, and recognizing the need to overhaul and update the curriculum, the CHS has recently started a comprehensive review process with the aim of developing 'core curriculum II'. This review will take into account the role of science and technology, as well as a closer analysis of community needs. It is likely that some of the objectives will be modified to incorporate the newer and emerging priorities (such as HIV/AIDS, ethics and ambulatory care) and reinforce communication skills and behavioural sciences. With respect to educational processes in the programme, problem-based learning will be further emphasized to promote greater integration of basic and clinical sciences, to develop better critical thinking skills in the students and to strengthen the important aspects of community-orientation.

Teaching and Learning Experiences

The community-oriented medical education concept that guided the development of the core curriculum envisaged that valid, relevant field learning experiences, both in the community and in hospitals and clinics, would form one of the cornerstones of medical education. The core curriculum itself contains recommendations regarding the use of teaching and learning experiences, such as lecturing, small group discussions and field and clinical experiences. After completion of the core curriculum in 1981, task forces of the Consortium began to develop guidelines for clinical and laboratory learning experiences, as well as guidelines for field-based learning experiences (PBL). Individual departments are expected to choose the teaching and learning experiences most suited to their own specific situations and objectives.

In 1985, the review to determine what changes had taken place in teaching/learning experiences showed that few newer, student-centred ones had been introduced. Most departments were conducting small group discussions more frequently, although these were not structured or planned with any great care, and often turned out to be small group lectures. Very little in the way of problem-based learning, or of horizontal and vertical integration/coordination between disciplines had been introduced. However, all schools were making attempts to develop and implement suitable field learning experiences. One school had progressed more than the others in its attempts to introduce

community-orientation into the core curriculum. This particular school was led by a dynamic and interested leader, who had given the process a great deal of attention, and some integration and coordination had taken place through joint departmental planning for each semester. In general, however, in 1985 direct clinical teaching experiences and clinical significance of the pre- and paraclinical disciplines was introduced late in the student career.

Now, however, it is observed that problem-based learning is gaining rapid acceptance amongst medical school faculties in the country, and is liked by both teachers and students despite the problems with learning resources. WHO and the Network of Community-Oriented Educational Institutions, along with the University of Gajah Mada, which was the pioneer in introducing PBL in Indonesia, are providing technical support to the CHS to introduce PBL in other schools. PBL has now been introduced into a number of schools in addition to Gajah Mada (such as the University of North Sumatra in Medan, the University of Padjajaran in Bandung, and the University of Udayana in Bali). As well, behavioural sciences components in the curriculum have been strengthened further, and more effective teaching and learning experiences have been introduced. The field education segment of the curriculum has benefitted maximally from the increased emphasis that is being placed on both PBL and behavioural sciences.

With regard to integration, an integrated project based on systems teaching has been started in the University of Indonesia in Jakarta, beginning with the cardiovascular system. Initial enthusiasm is high and may lead to expansion to include other systems once the second core curriculum (currently being developed) has been completed.

Student Assessment and Evaluation

Between 1969 and 1971, during the early days of the Consortium, a series of workshops to upgrade the skills of medical teaching staff with respect to student assessment was conducted in the medical schools in Indonesia. This programme led to the use of objective forms of assessment, particularly multiple choice questions (MCQs), in addition to the more traditional methods of evaluation such as essay questions and oral examinations.

One of the earliest programmes developed by CMS was the National Board Examinations Series, which was created in 1970 for the certification of medical graduates from private schools in order to improve the educational quality of private medical faculties. While a council of private medical schools existed as a controlling body for private medical education, the CHS had responsibility for

accreditation of private schools through the National Board Examination Series. Before the examinations became compulsory for all students in the 14 private medical schools that existed at that time, multiple choice questions (MCQs), written by teaching staff from all disciplines in two government medical schools, underwent several testing and revision exercises. Now however, these national boards, which were originally under the CHS, are conducted by a team consisting of representatives of government medical schools and two representatives from private schools. The format of the national boards is the same as before except that now there are no external examinations. The latter were responsible for many practical logistical problems both for students and staff.

Thus, at the time the core curriculum was introduced, the system of assessment was two-tiered, with different requirements for government and private medical faculties, and national examinations which were administered only to students in private schools. Instruments in use included objective type MCQs, short essays, practical tests (including clinicals) and interviews. Most MCQs were set at the basic recall/recognition levels. In general the higher levels of cognition were not addressed, and there was a need to develop further expertise in student assessment at most medical schools, particularly in item writing.

Therefore, after the introduction of the core curriculum in 1980, the CHS turned its attention to developing methods of student assessment and programme monitoring that would be consistent with the goals of the community-oriented, competency-based programme of medical education. Today there is a nucleus of staff in each medical school with expertise in assessment and evaluation who have been able to improve the quality of the examinations that are conducted. As a result of their efforts and the support of the CHS, the quality of student assessment has improved significantly. Now more valid and reliable assessment methods are being selected and used (for example, objective structured clinical examination – OCSE – is catching on in most of the schools), MCQs and MEQs are of higher quality, the question banks in most subjects have expanded, and more regular formative assessments are being employed with immediate feedback being given to the students. It is now almost routine in most of the medical schools to conduct careful item analyses after all examinations. Most schools follow the CHS guidelines in the matter of student assessment.

National Teacher Training Network

Since the mid 1970s, the Consortium has made concerted national efforts to upgrade the expertise of staff in the medical and dental schools. Staff development activities have included training in educational measurement, curriculum

development, teaching strategies and the work of educational bureaux and committees. The training has ranged from short courses at the national and local levels to short-term and long-term overseas training at selected centres of excellence. Now therefore, a nucleus of trained individuals who are able to undertake training activities exists in the medical schools in Indonesia.

A National Teacher Training Project (NTTP) team was formed by the CHS in 1982. One of the first tasks of this team was to devise a system of 'institutional self-assessment' which would help medical schools identify the problems they were faced with in implementation of the new curriculum, and would assist them in making appropriate adjustments to the existing curriculum. Thus the immediate aim of the NTTP was to help in the implementation of the core curriculum, while the long-term aims included developing a system of staff training to ensure maintenance and further development of the curriculum at the national level. Future tasks of the NTTP were also to include developing guidelines for field, clinical and laboratory learning experiences, as well as the training of faculty to utilize and manage these experiences.

In 1985, the CHS task force on staff development (NTTP) formulated a framework for a Regional Teacher Training Network (NTTN). The network would consist of teacher training centres (NTTCs) in the medical schools. In the first stage, five medical schools were to be developed into national-level centres, and two more would be developed in the next stage. The NTTC system was to function as one entity, bringing together all groups engaged in the production of health manpower. It was intended to be a key mechanism for assessing and guiding the education of health personnel to serve the changing health needs of the country. As such, the network would help in the implementation of CHS initiated activities and would assist in educational decision-making processes at the institutional and national levels. As well, the centres would provide leadership on a regular basis in such things as formulation of objectives, teaching-learning strategies, clinical and laboratory teaching/learning experiences, field-based education, educational management, national level quality control, assessment and evaluation, and educational support services.

Teacher training centres are now well established in all the medical schools. Each has a nucleus of staff trained in the main areas of medical education such as curriculum development, teaching methodology, student and programme evaluation and production of learning materials. Therefore it is only in very special circumstances that assistance from the CHS is needed for routine educational activities at the individual school level. Partly as a very positive consequence of the work of the CHS in staff development, the university system has decreed that it is essential for all teachers in the universities to undergo a course in

educational science in order for them to be eligible for promotion. The training that has been conducted by the CHS is valid for this purpose, and trained staff of the medical schools assist in organizing and conducting the training courses.

However, there is still room for improvement in the teacher training programme, which needs further strengthening if the reorientation of medical education is to be sustained and if the quality of both the programme and the graduates is to be maintained.

Postgraduate Training

The initiation of postgraduate courses in basic medical and clinical sciences was one of the earliest programmes to be considered by the Consortium. However, no action was taken until the late 70s, when the government decided to undertake a phased expansion of the health services at the periphery. This involved the upgrading of provincial and district level hospitals and the provision of specialist services, and necessitated a rapid increase in the number of clinical and laboratory specialists.

Specialist training programmes as well as programmes for training in basic sciences are now well established in the country. Programmes in the basic medical sciences were designed to serve the needs of all institutions in the country requiring the services of trained basic medical scientists, including medical schools, government health institutions and, to a certain extent, the private sector. The CHS drew up master plans for postgraduate education; examined the capacity of the different government medical schools to initiate postgraduate programmes through visitations by groups of experts; provided sustained infrastructural, technical and managerial support to the selected schools to make them centres of excellence; and developed objective procedures for selecting students.

As a result of the implementation of postgraduate training programmes, most of the vacant specialist posts in the country are now filled. Sufficient numbers of postgraduates are available in most specialities except in some disciplines, such as pathology, radiology and neurology, while saturation has been reached in other disciplines, such as medicine, surgery, obstetrics and gynaecology, and paediatrics. Increasing numbers of non-medical staff are now teaching in the preclinical departments, as in most other countries. Most hospitals providing tertiary care now have the requisite number of specialist physicians, although the rapid expansion of the private sector has caused some difficulties due to the overall shortage of specialists as well as to the migration of public sector physicians to the private sector.

Impact of the Consortium of Health Sciences

In general, insufficient data are available regarding the impact of CHS, so that definitive statements cannot be made. More careful and specific studies are necessary in order to determine and establish the impact of CHS programmes.

The broadest impact of the CHS concerns medical manpower development. Before the CHS existed, the situation prevailing in the country with regard to medical manpower was one of disorganization, with new medical schools springing up all over the country. The CHS, which looked at the situation qualitatively and quantitatively, developed a well coordinated system and set up a mechanism to continuously monitor the situation. As well, the CHS has influenced other health programmes managers, particularly those concerned with nursing and paramedical staff, who have in turn begun to look at personnel training in a systematic way.

The CHS has made an impact in all areas to which it has turned its attention. A systematic approach and unified efforts characterized CHS activities aimed at curriculum reorientation. As far as community-orientation is concerned, implementation is not yet uniform in all schools, and some schools have progressed more than others in this respect (for example, the universities of Gajah Mada, Andalas in Padang, and Denpasar). However, although more work is needed in the area of community-orientation, a few studies have indicated that graduates of the new programme are better prepared, both technically as well as attitudinally, to function as basic doctors in peripheral health facilities. A work study conducted in health centres in West Java in 1986 showed that the performance of new graduates in a selected list of common tasks was highly satisfactory. They were able to provide leadership to the health team and all of them considered their preventive and promotive responsibilities to be very important. Similar studies in other parts of Indonesia, including those eliciting community perceptions, have yielded similar results.

Another noteworthy effect of the CHS concerns the distribution of doctors. Although the Ministry of Health was responsible for improving the distribution of medical manpower in the country, the CHS was consulted to make sure that education and training was appropriate for rural postings. Today, most of the rural posts in the country, including those in peripheral Irian Jaya, have been filled. In some instances, increasingly so now, doctors opt to stay longer than the stipulated compulsory service period in these places. In fact, a few years ago the government faced difficulties in finding a sufficient number of rural posts for newly graduated doctors. The policy of compulsory rural service has been supported by a scheme of incentives whereby postgraduate opportunities as well as teaching posts are given to those who have completed rural service. This has helped in

overcoming the problem of maldistribution of doctors, and the exercise forms a good example of how the health sector and the education sector can work together.

Influence of the CHS is also apparent on postgraduate training. As a result of the implementation of postgraduate training programmes, most of the vacant posts for specialists in the country have been filled, and, for instance, most hospitals providing tertiary care now have sufficient specialist physicians.

The CHS has also influenced teacher training activities. Teacher training centres are now well established in all the medical schools, and each medical school has a nucleus of staff with expertise in the various areas of medical education. Partly as result of the work of the CHS in staff development, teachers are now required to undergo training in educational science as a prerequisite for promotion. A number of projects aimed at increasing the effectiveness of teachers, particularly with regard to PBL, are in progress, and PBL is gaining rapid acceptance among the medical school faculties in the country. Thus the CHS is influencing the quality of teaching in the country's medical schools.

Perhaps mention should also be made of the effect the CHS has had on the assessment of students. As mentioned above and as a result of CHS activities, today there is a nucleus of staff in each medical school with expertise in assessment and evaluation. These teachers have been responsible for, amongst other things, improvement in the quality of examinations, the introduction of more valid and reliable assessment methods, the higher quality of today's MCQs and MEQs, and the expansion of question banks in most subjects.

Problems Encountered By the Consortium

Core Curriculum

Although the core curriculum was adopted in 1980 by all medical schools and a sense of awareness created through a variety of activities, with much progress noticeable in all schools, implementation is not yet adequate. The extent to which the core curriculum itself, let alone in a problem-based or integrated format, has been implemented in different schools varies. The implementation process was not well organized at the school level.

Factors which hindered implementation of the core curriculum included confusion concerning the various teaching/learning approaches to meeting the objectives; the shortage of facilities, such as reference books (even though problem-based learning has now been introduced into several schools, and is

liked by both staff and students, there are still problems with learning resources); and inadequacy of teaching skills for implementation.

Although the core curriculum provides guidelines for moving towards an integrated educational programme, there is a lack of clear understanding with regard to the teaching/learning strategies of active learning, integration and problem-solving. This lack of understanding was exemplified in the attempt to develop an integrated module on the cardiovascular system in one of the universities. Confusion between the two modes of curricular planning (the competency-based approach recommended for the project and the discipline-based approach used to develop the core curriculum), and a lack of understanding of the purpose of the competency-based approach, resulted in an apparent impasse in the development of the preclinical levels of the module. Although task analyses had determined the elements of competence required, the preclinical committee was not able to match these with the specific objectives of the core curriculum.

There is also confusion with regard to the community-oriented approach. Although field experiences, which are an integral part of the core curriculum, are evident in all schools, there has been a wide range in interpretation of the meaning. Some schools have confused field experience with public health activities. Today, the extent of community-orientation in the different schools varies, and there is room for more work by the CHS in this regard.

As indicated above, the CHS is now involved in projects aimed at increasing the understanding and effectiveness of teachers in the new teaching/learning methodologies.

Student Assessment

Between 1969 and 1971 the Consortium, as mentioned above, held a series of workshops to upgrade the skills of medical teaching staff with respect to student assessment. Among other things, this led to the use of MCQs. At a later date, after the introduction of the core curriculum in 1980, the CHS again turned its attention to methods of student assessment.

By 1985 several problems were apparent. The use of MCQs had become something of a problem in that dependance on this form of assessment had become inordinate. As well, other concerns about student assessment included the lack of formative assessment procedures and the need for improvement in the clinical assessment procedure. As mentioned above, today there is a nucleus of staff in each medical school with expertise in assessment and evaluation, which is responsible for improving assessment procedures.

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The national board examinations, for private schools, have largely been successful. However, the external examinations which were originally included have now been discontinued because of logistical problems encountered by both staff and students.

Semester Credit System

The Semester Credit System (SKS), which had to be adopted by all the universities, continues to cause difficulties in the implementation of the curriculum in some schools. This is because some university administrators insist that the medical schools should implement the SKS system to the letter; whereas those universities which have allowed flexibility to each school in the adoption of the SKS system have not faced any problems. Because of the nature of the medical curriculum, it is not practical to take an inflexible stance with respect to the SKS system as this results in numerous operational impediments.

Accreditation

There is as yet no system for accreditation of medical schools in Indonesia. Accreditation is important as a measure of development in the early phases of implementation, and is important in the later stages of implementation for ensuring the quality of programmes. A system of accreditation is therefore being developed in the country, and the CHS is spearheading a programme for this activity.

Discussion and Conclusions

The successful approach used by the Consortium has been characterized by full and open exploration of issues; policy determination by consensus (a slow process, but one which leads to full support once decisions are made); systematic planning for and staging of policy implementation; careful selection and preparation of persons for overseas training (where new kinds of expertise are required); and clear specification of the long-term roles of those selected for overseas training as well as full utilization of their new expertise both in training others and in continuing programme development. A key element in the success of the Consortium has been the highly capable leadership (both in the CHS and in the medical schools), and the very effective interpersonal communication that the leaders have been able to stimulate by their own actions as well as by their positive attitudes.

Perhaps the most important achievement of the CHS has been the implementation of the core curriculum on a national basis, a process which was

preceded by systematic and thoughtful planning, by the creation of a conducive environment, and by paying attention to the unique Indonesian culture. Educational bureaux were first established in all medical schools to guide activities for making the environment within the schools conducive to the reorientation of medical education. At least 50 per cent of bureau members were heads of departments, so providing the bureaux with power bases from which to coordinate educational change. Also, because the original plan had been worked out by senior faculty members, usually the deans of medicine, the bureaux were assured of the support and consent of significant authority figures in the faculties. This support to the bureaux was crucial to the long-term effectiveness of the programme. Since the Indonesian culture is authority-centred, and policy-making in the country is highly centralist, official support for educational change was also probably a vital ingredient of its implementation.

It was also important that the members of educational bureaux were all practising physicians. This meant that they had the capacity and knowledge to use their familiarity with the subject matter of medicine to assist their colleagues in the details associated with educational objectives. Many problems which surfaced during the project concerned the construction of detailed curricula on sets of specific instructional objectives, and bureau members were able to make significant contributions in this respect. A contrasting situation exists in most western universities, where the majority of staff are either educationists or psychologists, and, not being in medical practice, would be unable to make useful contributions in an analogous situation.

Several aspects of the organization of the workshops conducted by the educational bureaux were of significance to the degree of success achieved by them. These included: careful selection of participants; involvement of a cross-section of each whole faculty; and the fact that each workshop was seen only as part of a developmental process and was systematically followed up. The handing on of knowledge by workshop participants, to colleagues who had not attended workshops, was also an important factor underlying the changes which took place.

The activities of the NTTN no doubt contributed a great deal to the successful implementation of the core curriculum. The original idea for the development of the NTTC system was that it should be developed as a 'product' of the educational committees of the medical schools themselves and not as a scheme imposed on them from outside. It was considered that 'ownership' was a prerequisite to the development of a dynamic and durable movement and the eventual success of the exercise. Therefore the deans and other important people in the universities were involved from the beginning.

After the energetic start to the core curriculum programme, momentum slowed, and although the curriculum has been implemented there is still much to be done as far as integration and problem-solving are concerned. This seems to be mainly due to the lack of clear understanding with regard to integration and PBL. Only in one medical school, where there is interested, enlightened educational leadership, has there been any attempt to bring about some integration and coordination through joint planning by departments for each semester. The introduction of PBL, integration, greater relevance of the pre- and paraclinical experiences, and more coordinated teaching without causing any dislocation of the programmes could be attained by improved management functions. Varying managerial mechanisms are necessitated, for instance, where structures and decrees are prescribed to medical schools and there is flexibility in the degree of interpretation permitted in the individual schools. There is a need to ensure that management support provided to the educational process is effective and efficient, and the strategies that would enable the management subsystem to further facilitate the educational processes need to be determined and examined at both local and national levels.

As mentioned above, the CHS has recently begun to review the core curriculum in order to update it with respect to emerging health problems. For example, with the increasing proportion of elderly people in the Indonesian population, more consideration needs to be given to geriatrics. It is important that any curriculum be reviewed at intervals in order to accommodate the changing health needs of a country.

Miscellaneous factors that have contributed to the success of the CHS include the fact that Indonesia does not have a problem of migration of its human resources. Because there is no loss of expertise due to migration, continuity of changes in medical education can be maintained. Also contributing to the success of the CHS is the fact that there has been sufficient external support, both technical and financial, to plan and implement innovations. In this respect, WHO's role has also been critical, especially with regard to consultants and funds.

8
Overview

THE case studies described in this publication illustrate how different countries in the South-East Asia Region are approaching the reorientation of medical education, an activity which arose from a basic concern about the balance and relevance of medical personnel and their education in meeting the health care needs of the community. The need for meaningful coordination between training institutions and the health care delivery system, and for reorientation of training curricula for health personnel, has been voiced and, because of their particular reference to medical education, has prompted the production of this volume. Each story outlined is unique with regard to such matters as the type and degree of reorientation, the speed of implementation, and the means of implementation. Different strategies for reorienting medical education arise from differences in the culture and needs of each country. There are, however, some innovative features among these strategies which are common to all countries and which may be of interest and instructional value to potential innovators.

Although WHO is deeply involved with changes in medical education, this publication is intended to be merely descriptive and not representative of the WHO viewpoint. This overview tries to identify some of the essential features of the changes, and point out those that helped or hindered the progress and success of the innovations.

Triggers of Change

Usually it is possible to identify triggers for the changes that take place in medical education, and different types of event triggered the changes outlined in these case studies.

As mentioned above, concern about the balance and relevance of medical personnel led to many of the innovations outlined here. Conditions which are

highlighted in these case studies and which triggered changes towards community-oriented education include overall shortages and unequal geographical distribution of doctors, unwillingness on the part of doctors to serve in rural areas, and perceived lack of relevance of the training of doctors to local needs. Such factors were operational in each of the case studies outlined in this publication, which also illustrate different strategies for dealing with the problem of maldistribution of doctors through medical education.

Other events which triggered some of the changes outlined here include the medical education conferences and seminars of Thailand and Myanmar. For instance, following identification of the need for an innovative medical education curriculum to promote the qualities of critical thinking, clinical reasoning, decision making, and problem solving as well as leadership skills and the ability to work in a team, at the medical education conference in Thailand in 1986, the Community Targeted Problem Based (CTPB) curriculum of Chulalongkorn University began to take shape. Similarly, in Myanmar, the theme for the medical education seminar in 1970 was 'Introduction of Community Medicine' while in 1987 PBL was recommended. Following these seminars, relevant changes began to be implemented. Thus, medical education seminars and congresses can serve as triggers for orientating medical education towards the health needs of a country.

The promotional and technical work of WHO in the last two decades has also triggered off a number of innovative developments in medical education in the region. The main means employed by WHO for this purpose has been the organization of regular consultations and conferences in medical education and the production of quality, 'state of the art' technical documents. All the cases described in this volume have been influenced to varying degrees by the work of WHO, and the trigger and catalytic role played by WHO is evident.

In countries of the South-East Asia Region, the need for change in medical education arose not in isolation but in the context of the political and social changes taking place. Particularly in Myanmar and Sri Lanka, the need to change from the colonial system of administration and education in general was important in triggering awareness of the need for change in medical education. In Indonesia, the urgent need to develop a national system out of a complicated, inefficient labyrinth of medical education programmes was very evident.

Curriculum Diversity and Change

The case studies in this publication illustrate the variation that is found in the community-orientation, PBL and integration components of medical school curricula.

In these case studies, surveys of common health problems in the local communities preceded the development of the community-oriented curricula, so that each programme is unique with respect to the health problems it emphasizes. The percentage of community orientation in the curricula of different schools varies. For instance, the CHAD curriculum covers 12 per cent of the total teaching time of the whole undergraduate curriculum in CMC. In the MESRAP programme of Chulalongkorn University the percentage of teaching time occupied by community medicine is 16 per cent, while in Nepal the total is 23 per cent, and this is quite a high percentage anywhere in the world.

With regard to PBL, reoriented curricula vary according to how much emphasis is placed on student-centred active learning. In Myanmar, in the new curriculum, up to 150 hours (about 15 per cent of total teaching time) are allocated for integrated community-oriented and problem-based learning experiences in the first year, while in all subsequent years 'certain hours' are allocated. Chulalongkorn University however started at the other extreme with the CTPB curriculum, which is predominantly integrated and problem-based from start to finish. The CHAD teaching programme is also truly integrated as well as problem- and community-based, although it is only a segment of the entire medical school curriculum.

Curricula need to be dynamic and should undergo continual review and revision, as is happening in the cases highlighted here. In Chulalongkorn University, the two innovative programmes (CTPB and MESRAP) are being reshaped into one, along with the regular track, so that the best of all teaching methods will be incorporated, and thus the programme will no longer be entirely problem-based. In Myanmar, if the PBL experience is successful, more will gradually be introduced. In Indonesia, the core curriculum is continually updated to keep pace with the emergent health needs (such as geriatrics) of the country and with science and technology.

With some subject matter, as experience in Thailand with the CTPB programme indicates, traditional modes of teaching, such as lecturing, allow information to be transferred to the students more efficiently and effectively than do active learning methods. It is not necessary to totally discard other methods of teaching when changing to PBL, and most schools which have adopted PBL have adopted it as a teaching strategy that is used in conjunction with conventional methods. In some schools, such as Tufts University Medical School, regular lectures are followed by the selection of problems related to the system being taught, so that education is more problem-oriented than problem-based. This is the direction in which the new curriculum in Myanmar is heading. Perhaps it should be pointed out that, as there is no generally accepted definition of 'problem-based learning',

and it is understood differently by different people and different schools, this causes confusion to teaching staff trying to understand the new approach to teaching.

Part of the success of other schools in changing their curricula (such as Sherbrooke in Canada and Tufts in the United States) has been due to the willingness of staff to accept modifications, providing these modifications do not compromise basic principles. In the case studies presented here, staff of the medical schools have often proved reluctant to participate in curriculum planning. Strategies that have helped other schools, such as Sherbrooke (in Canada), to encourage staff to participate in curriculum planning include the introduction of reward systems which, for instance, allow effort spent on curriculum development to count towards promotion.

Although PBL and community-orientation have been incorporated to a greater or lesser extent in the curricula of the institutes mentioned in this publication, integration of a curriculum seems in all instances to be a more difficult undertaking. A significant degree of integration has been achieved in the CTPB programme of Chulalongkorn University and in the CHAD teaching programme. The block posting arrangement used by CHAD is eminently suited to integration. In Nepal and Indonesia it has not yet proved possible to introduce much in the way of integration, even though it was planned to develop integrated curricula. Problems in planning an integrated curriculum include the fact that staff from different disciplines, often with different backgrounds and different points of view, are required to spend a great deal of time in planning - time which they are usually too busy to find.

In all the medical schools mentioned in this publication, the curriculum is divided into premedical, preclinical and clinical phases, a distinction which is at variance with the notion of PBL and integration, at least amongst the purists. However, few 'established' schools in the world have achieved the complete abolition of this demarcation. The curriculum in Myanmar is unique in that it has a PBL component in the premedical curriculum, which no other medical school has.

As well as community-orientation, PBL and integration, behavioural sciences also form part of the 'ideal' reoriented curriculum, and have been included in the CHAD, MESRAP, Indonesian and Myanmar teaching programmes. It has been realized in the last few decades that the behaviour of individuals and communities influences the occurrence of diseases, and medical schools around the world have been incorporating behavioural sciences as an integral part of the basic sciences taught to medical students. The term behavioural sciences refers mainly

to medical sociology, medical psychology, medical anthropology and health economics. The place and importance of the behavioural sciences have been well articulated by the late David Maddison, founding dean of Newcastle Medical School, Australia, who described these sciences as '.... the skills, knowledge and influence which would clearly be required if any practical sense was to be made out of the commitment to use a medical graduate with a sophisticated understanding of social and community processes .... and the doctor-patient relationship'.

The development of team-work and intersectoral skills in students are also objectives of reoriented curricula. Doctors need to work as members of teams, and therefore there is a need for students to gain experience of team-work during their training so that they learn to appreciate the input of other members of the team. This has been taken into consideration in the CHAD and Nepal training programmes. As well, the objectives of reoriented curricula may include instilling in the students a concern for human values, as in the MESRAP and CHAD training programmes.

Nowadays students are often represented on curriculum planning committees. Since students are the only ones who see all of a curriculum in action, their views often give valuable insights to staff. Thus the inclusion of students in curriculum planning committees is to be encouraged.

Changes in medical education in recent years largely concern reform of the undergraduate curriculum, in the hope that this will make a doctor's education more relevant to contemporary needs. As well as changes in undergraduate education, perhaps the focus of policy makers should also be broadened to include postgraduate medical education, as it has been in PGIM in Sri Lanka.

In summary, and as one would expect, these case studies confirm that it is always more difficult to change an already established and ongoing teaching progamme than to set up a new one. Increasing relevance is the most important feature of any health personnel education programme, and each change should bring greater relevance not only at the programme level, but also, more importantly, at the health care delivery level itself.

Student Selection

A wide variety of selection procedures exists in South-East Asia. For instance, in Myanmar the procedure is very simple, and MBBS students are simply selected from those at the top of the list of examination results; whereas in Thailand, for

both the MESRAP and CTPB students, innovative and complex means of selection are used.

In general, it has not been uniformly accepted that multiple selection criteria are preferable to the single criterion of academic achievement. The use of a variety of selection processes, to assess a variety of student abilities, allows the use of a variety of learning processes which, ultimately, benefits the community. The most relevant selection processes are probably those attempts, usually inadequate, which assess some of the all important qualities such as motivation, empathy and problem-solving ability.

As far as the MESRAP programme in Thailand is concerned, where peripheral hospital staff are involved in the selection procedures, the selection seems to have been successful insofar as graduates from this course are still located in the MESRAP area, even though quite a number of them have completed their bonded years. For CTPB, however, the selection process is so rigorous that it has not been possible to fill all the places on the course. Another problem with the CTPB selection process is that it selects only students from the wealthiest strata of Thai society, and these are the people who are furthest removed from the communities they are being trained to serve.

Nepal's very innovative approach to student selection is that half of the students are selected from middle level health workers. Originally, when all the students came from this section of society, the innovation resulted in a lot of opposition. The opposition was finally quelled through a compromise agreement whereby half of the students are allowed to enter medical school laterally from high school. Students who enter the programme laterally are required to spend a year in a community health centre before they enter medical school. While it is too early to compare products from the two selection streams, the earlier graduates, who are entirely derived from middle level health workers, are extremely motivated to work in rural areas (although other factors which come into play may mean that they do not do so).

Implementation of Change

These case studies illustrate that there are many different ways of implementing needed changes in medical education. For instance, with regard to introducing PBL, a new medical school may be established, or the whole curriculum of a school may be changed, or a parallel track may be instituted, or some departments may undertake PBL while others not, or PBL may be introduced year by year rather than in all classes at the same time. There is a wide range of different

approaches amongst medical schools. Most established schools introduce PBL progressively, although some traditional schools have changed over completely in one year (such as Sherbrooke in Canada and Hawaii in the US).

An approach to implementation that has been widely advocated is that of the adoption of alternative tracks, so that only a sector of the student body (sometimes those who volunteer) learns in a PBL second track, while the major curriculum remains the same. This is the method that was adopted by Chulalongkorn University. The separate track approach avoids having to move an entire faculty, all the teaching staff and the total student body to a PBL curriculum at one time. The parallel track approach may require more staff, because of double teaching. However, Chulalongkorn University, which has a particularly high staff:student ratio, did not require extra staff to begin the parallel track, although one reason for the current merging of all three tracks into one is to ease the workload of teaching staff. With the MESRAP programme, Chulalongkorn University also managed without extra staff, although it used the innovative strategy of utilizing peripheral hospitals and training the hospital staff for teaching duties. Cultural attributes may determine the approach to be used. For instance, in Thailand, the culture is such that people respect authority and support decisions made by their superiors. Perhaps in other cultures peripheral hospital staff would have objected to the large amount of extra work in the form of teaching, and university staff would have objected to being involved in three parallel tracks at one time.

In contrast to the dramatic introduction of innovative medical education programmes in Thailand, in neighbouring Myanmar the strategy has been very different. In Myanmar the approach is cautious, and the introduction of a minimal amount of PBL is to be followed by the gradual incorporation of more PBL if the teaching mode is found to be practicable. Myanmar first trained a core group of people abroad, and then used this trained core to motivate the remaining faculty. This approach requires much more time than the approach adopted by Chulalongkorn University, and the staff of Myanmar's institutes of medicine have had several years of workshops, during which they have gradually come to accept the idea of PBL. The staff who were originally trained overseas, although few in number, had a significant motivating effect on their colleagues and on the creation of awareness, change of attitude and development of teaching skills within the three institutes.

The approach adopted by Nepal was different from both of the above. In this case foreign consultants came to the country in order to help formulate the new curriculum. The result was a very ambitious programme, and although the community-orientation component is effective, success with the implementation

of PBL and integration has so far fallen short of expectations. One of the main reasons for this is lack of staff awareness about PBL in particular and integration in general. Probably the same is true of Indonesia, where the approach to reforming medical education was to implement a core curriculum on a nation-wide basis. Initially in Indonesia even community-orientation caused problems, with some staff understanding 'community-orientation' to be synonymous with 'rural health service' until quite recently. Little PBL has been introduced into the curriculum of any medical school in Indonesia, except one which had enlightened leadership (Gajah Mada). In Indonesia it seems that, as in Nepal, a lack of clear understanding of integration and PBL on the part of tutors has been one of the main obstacles to the implementation of these aspects of the curriculum.

Factors for Success

Success in implementation depends on various factors, some of which are brought out in these case studies, including the quality of leadership, teacher training, and the use of external assistance.

As illustrated by the case studies, most schools advocate the use of foreign consultants when establishing a PBL curriculum. Teachers from schools with established PBL programmes can provide useful guidance in the formulation of curricula and training modules, as well as in teacher training. As emphasized in these studies, in order for PBL programmes to take off, tutors need to be aware of the new teaching mode, to be convinced of its effectiveness and to be trained in its principles. Support by international experts in medical education in the direction of the proposed changes is a validation process which many teachers find essential. Networking with other innovative programmes has also been shown to be helpful.

As far as teacher training is concerned, sufficient time is needed for teachers to develop understanding of the teaching skills required, to select the examples to be used, and to implement the use of these examples. The role of the teacher has to change from that of lecturer to that of facilitator of learning, and teachers must be trained for small-group instruction. PBL often makes increased demands on teacher time, particularly in the early stages and where there is understaffing, and this can prove to be a very major problem.

Different approaches to teacher training are evident in these case studies. For instance, in Myanmar a range of workshops was conducted, over a period of several years, by a core group of people who were trained overseas. These workshops were initially aimed at creating awareness and were later directed at

training staff and at creating and testing PBL modules. In Thailand also a lot of effort was expended in training staff. The success of the MESRAP programme was in large part due to the extensive training of staff in peripheral hospitals. As well, for the CTPB programme, as many workshops as possible in the small amount of time available helped tutors to clearly understand their role in the PBL teaching process. In all instances where workshops have been attended, the handing on of knowledge by workshop participants to colleagues who have not attended workshops is an important factor in the change process. Teacher training has been less emphasized in Nepal, a fact which may be partly responsible for the current lack of understanding and the low level usage of PBL.

Other ways of training teachers which are brought out in these case studies, besides the use of foreign consultants and the use of workshops, include the use of fellowships to train staff overseas in centres of excellence, and the establishment of teacher training centres and medical education units (as in Indonesia, Myanmar and Thailand). In Indonesia, where the CHS has implemented a national core curriculum, a national teacher training network was also established, with a centre in each medical school. Training of staff, both locally and overseas, in centres of excellence, is an activity that is often supported by WHO and is instrumental in making available committed, creative and well informed faculty.

Also important to the success of implementation is the quality of leadership. Perhaps the main point that is brought out by these case studies is the fact that a leader needs to be respected, to have good contacts, and to make judicious compromises. For instance, in Sri Lanka, PGIM did not get established until it was led by a director who was respected among the clinical community, and who had many personal contacts whom he was able to use in developing PGIM. This director also made several compromises, such as that which enabled students to carry out part of their training overseas. The need for compromising is also brought out in the Nepal case study, where a compromise allowed lateral entry into the MBBS programme (which was originally open only to those students who were already middle level health workers). As well as in Sri Lanka, personal contacts were also important in getting the Chulalongkorn programmes off the ground so quickly. Occasionally an authoritarian approach by a leader may be beneficial. For instance, in CHAD an authoritarian approach was initially used to persuade tutors to accept the block posting system, which disrupted the teaching of other departments. Although there was still a lot of opposition from staff, they accepted the ruling and agreed to give the block posting arrangement a try.

In summary therefore, a leader needs to be charismatic and ready to devote all his/her time and energy to the success of the reform. Such a leader also

needs a core of dedicated staff to plan the activities necessary for the changes. The importance of a leader's qualities is particularly brought out in the Indonesia study, where the first school to really bring in reform was the only one with an enlightened and interested leader. As well, the highly capable leadership of the CHS was a key element in the success of nation-wide implementation, and leaders of the CHS were able not only to build a broad base of ownership for the change but also to build understanding of the change through broad participation.

It is also clear that, for leadership to be effective, there is a need for continuity of personnel. It is necessary to always have a core group of people to keep up the impetus for change. This was emphasized in the Myanmar case study, when the impetus was reduced somewhat following the retirement of key personnel. Continual changes in key personnel were a problem for the MESRAP programme of Thailand, although despite this, the innovative programmes were implemented very rapidly.

Other factors for success include the full and open exploration of issues which characterized the CHS (Indonesia) approach to implementation. Full and open discussion of issues was also an important element in the implementation of the Nepal programme. Strong official support for educational change may also be a vital ingredient for implementation, especially in authority-centred cultures such as Indonesia, where policy making is highly centralist. Another factor for success, also exemplified by Indonesia, is that decision making by consensus, although a slow process, results in full support. One other factor for success that is brought out by the Myanmar experience is that of paving the way for changes. In Myanmar, community-orientation was introduced into the curriculum some 15 years before the introduction of PBL. This resulted in attitudinal changes which allowed people to see the necessity of looking at problems in their entirety as opposed to their clinical discipline (as is necessary in community work).

Constraints to Implementation

One of the chief obstacles to successful implementation of an innovative medical education programme is that of opposition from different quarters, which occurred during the implementation of all the programmes outlined in this publication. Most opposition emanates from teaching staff, who have been trained in traditional ways in traditional schools. Also a certain amount of opposition comes from students.

Some of the opposition from teaching staff stems from the lack of clear understanding about new teaching modes and from the lack of knowledge concerning the benefits of, or the reasons for, change. This sort of opposition can be overcome through appropriate training of teachers in workshops and seminars. Teachers should clearly understand their role in the new teaching process. This is particularly so in the case of PBL, where a teacher's role is entirely different from that in traditional methods of teaching. In PBL a teacher's role has to change from that of lecturer to that of small-group facilitator. In PBL, as compared to traditional teaching, a teacher spends less time in preparation but more time with students, although overall it has been shown that there is little difference in the total amount of time spent working. Also, in PBL, teaching consists mostly of small-group instruction, which teachers need to be trained for. Teachers are often excited when they see how effective the self-learning process in small groups of motivated students can be. However, teachers may initially find it disappointing that they no longer have the opportunity to expose their special knowledge or expertise to the class.

Apart from training teachers in workshops, another way of countering opposition by teachers is to involve them in the change process by, for instance, putting them on committees. This procedure was used in Myanmar and Thailand. In Thailand, because of shortage of time, hard core resistant individuals were ignored in the hurry to get the programme implemented, although the majority of staff were soon caught up in the enthusiasm that was generated during the short time available for preparations.

An authoritarian approach can also help to overcome opposition, as in Vellore in the initial stages of CHAD. In this case there was a lot of opposition to the block postings, which were encroaching on the teaching time of other departments. An authoritarian approach may be useful particularly in countries where the culture is such that people respond to authority. For instance, in Nepal it is possible that, if the government were to support the implementation of PBL, this would be sufficient to motivate staff.

Overcoming opposition through tolerance and open discussion is another strategy that has proved beneficial. Prior to implementation of the new curriculum in Nepal, the dean overcame opposition with the help of patient explanation and open discussion of the issues involved, and the proposed curriculum and other relevant documents were widely distributed throughout the institution. Many people who do not initially share the commitment to change need time to come to terms with the innovations and the disturbances that will ensue, and therefore change is perhaps best achieved through patience and tolerance. This approach has also been successful elsewhere. However, the IOM in Nepal was unable to

withstand all the pressure from interested power groups, particularly those from within the medical profession, and the eventual compromise to the innovative selection procedure resulted in a weakening of the innovation.

Another strategy for appeasing opposition is that of involving other departments. For instance, in the CHAD block postings, although the whole block posting is arranged and organized by staff of the community health department, other departments are involved as much as possible in the teaching. Involvement of all departments is of course necessary in an integrated curriculum.

Even where there is no opposition to innovations, lack of expertise in modern educational science and technology often hinders the introduction of educational reforms. In Thailand and Myanmar, for example, there was positive interest because there were staff with knowledge and expertise in modern educational methods, which greatly facilitated the introduction and maintenance of the innovations.

Opposition from students usually stems from the fact that they find it very hard at first to adjust to the new learning methods. By the time they reach medical school, most students have been conditioned to didactic teaching methods and passive learning, and they find it hard to adapt to active learning. They become very insecure when there are no limits to the content of the curriculum, and worry whether they are covering enough material, or whether they are covering the right information, or whether they are covering the same things as their colleagues. Track students may also feel that they are considered to be inferior to regular track students, as has been observed with track students in Thailand. Experience of instituting PBL in various medical schools has shown that an initial and usual experience among students is one of confusion and lack of a sense of purpose. Eventually, after two or three terms, the students become accustomed to the new learning method and are often very enthusiastic and excited about it. They find it quite demanding, but stimulating. One of the most widely accepted merits of PBL is the way in which it can motivate students.

PBL also helps students to develop skills of self-directed learning and self-assessment, which are necessary for their continuing education. As students become more expert in PBL, their assessment and criticism of themselves becomes automatic and self-motivated. Continual education is necessary in the practice of medicine. Many doctors, especially those trained in traditional schools, do not continue to learn sufficiently after they have graduated.

The fact that the majority of medical text books are written in the English language can also cause problems for students in a PBL track (where the emphasis is on how much and what to read), particularly in those countries

where English is not widely spoken, such as Thailand. However, with English language training and once the students have adjusted to the teaching method, the language is no longer a problem.

Another constraint to implementation, common to the case studies presented in this publication, is the lack of facilities and resources. The innovative approach to this problem taken by Chulalongkorn University was to involve peripheral hospitals and their staff in community-oriented teaching. This involved a lot of organization and training of peripheral hospital staff, which turned out to be worthwhile, and the arrangement was nowhere near as costly as establishing a new medical school. As a side effect, the peripheral hospitals involved have achieved some sort of status, and the staff too, due to their involvement with academic activities.

To help with the provision of facilities for PBL, many schools establish medical education units. In the examples presented here, medical education units were established in Chulalongkorn University and in all three institutes in Myanmar, where they have proved to be of enormous value. Financial resources are always required in developing countries for provision of books (generally libraries are not well stocked) and other equipment, whereas the same constraint is not generally felt by schools in the West.

Impact

A major challenge for most innovations in medical education is to ensure that the knowledge, skills and attitudes developed during training persist through the years and into practice. To demonstrate this, as well as the relationship between the products of an innovative educational programme and positive changes in health care and health status, is difficult.

More information as to whether graduates from innovative programmes are, at least in some respects, qualitatively different from graduates of other programmes is needed. Some of the questions being raised concern whether such graduates voluntarily maintain their professional competence throughout their careers, whether they demonstrate empathic behaviour, and whether they interact beneficially with medical colleagues and other health workers. Such objective evidence is lacking for a number of reasons, including the technical difficulties of conducting such evaluations. Because of the reality that medical education and medical practice are separated spatially, regular mechanisms to assess physician performance need to be set up, and few countries have done this. Evidence of success should also be apparent in comparisons (in terms of

knowledge, attitudes and skills) of today's graduates with those of previous generations, but, as there are no reliable data concerning the knowledge, attitudes and skills of earlier graduates, such comparisons cannot be made. Empirical evaluation of innovative programmes is, however, one of the most important challenges if such programmes are to be improved and other schools in the region encouraged to adopt some of them.

As far as the programmes of medical education outlined here are concerned, as yet there has been little assessment of the impact of PBL, but some assessment has been made of the impact of community-orientation. In this respect, impacts highlighted in this publication include those on community health, maldistribution of doctors, and attitude.

The ultimate evidence for the success of medical education innovations is to be seen in the impact on health care and health practices. However, only the CHAD programme of CMC has been established for long enough to allow these effects to become apparent, and in this respect its impact has been substantial. The programme has also had an impact on the attitudes of doctors, who are highly motivated to work in rural areas, and some 30 per cent of the graduates remain in rural posts.

An impact on attitude is also apparent in graduates of the remaining five programmes with which this publication is concerned. However, even though the graduates are motivated to work in rural areas, most do not do so for much longer than their obligations, except in Thailand (where the development of the MESRAP region means that the graduates are no longer working in a hardship area). This indicates that, besides training and sensitivity, incentives are required in order to motivate medical personnel to work in community environments. Myanmar has introduced certain incentives for graduates who work in border areas, which has reduced the problem somewhat, although doctors are still not prepared to stay for longer than necessary. In Indonesia also, the provision of incentives for graduates with rural experience, such as postgraduate and teaching post opportunities, has helped to overcome the maldistribution problem.

A different attitudinal impact is apparent with the Nepal programme, and is a result of the innovative approach to selection of students (whereby half of the students are recruited from middle level health workers). Because of their origin among middle level health workers, Nepal graduates do not have any form of superiority complex when working in a team, as is often the case with graduates of traditional medical schools. Nepal graduates are very aware of the input of other members of the team.

Apart from the impact on attitude, impact is also apparent on certain skills of doctors, including communication, public health and problem-solving skills.

Thus, so far, community-oriented education in South-East Asia has mainly influenced only the attitudes of doctors, many of whom are enthusiastic about community medicine and have developed a concern for human values. But the problem of maldistribution is still present, except possibly in Thailand (at least in the MESRAP area) and Indonesia. The current trend indicates that, while the relative proportion of doctors in rural and urban areas has not shown a significant change, in absolute terms there are larger numbers of doctors working in rural areas now than a decade ago. It is to the credit of innovators in medical education that in general most of these doctors are better prepared technically and mentally to serve in rural areas.

Finally, it must be stressed that governing bodies and funding agencies for medical education need to accept that learning of medicine should take place in a wide variety of sites in addition to the traditional venue of the teaching hospital, and with expanded objectives. Without the kind of urgent multifocal action that can be seen in some of the pioneering programmes described in this publication, medical education may turn inwards and be confined to the teaching hospital and the research laboratory. It should then not come as any surprise if public confidence, support and respect evaporate.